UNDERSTANDING THE EFFECTS OF PERSONAL RESPONSIBILITY AND ENVIRONMENT ON THE DEVELOPMENT OF SELF-DIRECTED LEARNING: AN EXPLORATORY STUDY

by

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B.A., University of Washington, 1987
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AN ABSTRACT OF A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree

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Abstract

This exploratory study analyzed changes in self-directed learning of Army officers attending the Army's Command and General Staff Officers Course, CGSOC, by applying a quasi-experimental, pretest posttest, comparative approach based on the attribute independent variables gender, race/ethnicity, level of education, and branch of Army. It also sought to inform implementation and assessment strategies in both the private and broader public sectors, specifically companies and organizations seeking to develop lifelong learners in the furtherance of creating or sustaining a learning organization.

The study began with the administration of the Personal Responsibility Orientation to Self-directed Learning Scale (PRO-SDLS) during the first week of a ten-month resident course and concluded with a second administration of the PRO-SDLS at the end of the course. In addition to a total score, the PRO-SDLS provided results for four dependent variables: learner initiative, learner self-efficacy, learner control, and learner motivation.

Though effect size varied, this study found a statistically significant difference in pretest to posttest scores differences between white and non-white in both total score and in the subcomponent of learner motivation. Additionally, the change in scores for learner motivation from pretest to posttest for whites was statically significant. Finally, the change in scores for the subcomponent of learner control between students with a bachelor's degree and those with a master's degree was also significant.

The broader implication of these findings is the caution by Brockett and Hiemsta (1991) that adult educators should consider the individual characteristics of the learner when developing and delivering curriculum. In this case it would appear that either the curriculum or the delivery of the curriculum or a combination of the two may have been experienced differently by white and non-white Army officers; specifically regarding the development of learner motivation.

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Table of Contents

List of Figures

List of Tables

Acknowledgements

Dedication

I dedicate this dissertation to my Creator and my family. I did not create myself, nor did I give myself intellect. My wife, Leslie, has put up with so much as I journeyed through my life. She has been a constant guide and companion without whom I would surely have been lost. My children Alex, Vanessa, Alison, Andrew, Aiden, Zachary, and Josh have borne the end of many a discussion regarding their development and learning capabilities. I have watched them grow and it is my greatest joy.

Digitus Dei est hic

St Ignatius of Loyola

Chapter 1 - Introduction

Overview

The Army's Learning Concept for 2015 calls for the Army to build a culture that promotes lifelong learning and lists lifelong learning as one of nine 21st century soldier competencies (U.S. Army Training and Doctrine Command, 2011). Dempsey (2011) described a continuum of learning beginning when the soldier enters military service and continuing through to their career departure. He wrote that responsibility for developing soldiers along this continuum was shared between the Army's training and educational institutions, the warfighting units, and the soldiers themselves (U.S. Army Training and Doctrine Command, 2011).

In addition to describing lifelong learning as both a culture and an individual competency, the Army's Learning Concept also listed lifelong learning as a factor of the learning environment and described it in this manner:

> The importance of lifelong learning increases as the pace of change and information flow increases. Remaining competitive in the civilian job market requires workers to update professional skills throughout careers. Likewise, soldiers must acquire the habits of lifelong learners. Soldiers must become expert, self-motivated learners who are capable of asking good questions and possess digital literacy skills that enable them to find, evaluate, and employ online knowledge, whether in learning or operational environments. (U.S. Army Training and Doctrine Command, 2011, p. 14)

Dempsey (2014) called on all military services to shift the focus of their effort from the building military kinetic power and platform development to developing the military's soldiers, sailors, airmen, and marines. He also wrote, "To deliver the future force the nation needs, we must develop leaders who can out-maneuver, out-think, and out-innovate our adversaries, while building trust, understanding, and cooperation with our partners" (Dempsey, 2014, p. 4).

An organizational focus on personnel development; however, is not unique to the military (Blanchard & Thacker, 2013). Noe (2013) wrote that the development of lifelong learning skills had implications for business and other types of organizations as well. Noe (2013) advocated that an emphasis on learning improved employee performance and helped companies achieve their objectives. Just as Dempsey (2014) called on the military services to create leaders who can out-think adversaries, Noe contended that unpredictability in the business world would

continue to be the norm and to meet the challenge of a unpredictable world, workforce development should produce workers who are willing to leverage learning whenever and wherever they find themselves problem solving in pursuit of corporate goals (Noe, 2013).

In pursuit of the goal of developing lifelong learners, the military departments, private sector organizations, and the field of adult education continues to expand research about and advocacy for the development of lifelong learning skills (Blatt, 2007; Brockett & Hiemstra, 2010; Francom, 2010; Miller-Juve, 2012). Just as the military and business world have advocated that learning needs to occur whenever and wherever needed, Michael Newman (2014) described adult education as now being everywhere. He advocated that all adults go on learning throughout their lives. They learn because their employers require them to learn. They learn because their professions require them to remain abreast of developments in their personal and professional lives. Regarding the context of this environment of continuous adult learning Newman claimed the field of adult education was in need of new insights and practices. He wrote, "What makes the world of adult education so special is the extraordinariness of every single learning event, the uniqueness of every group that gathers to learn, and the distinctive nature of every learning outcome" (Newman, 2014, p. 7).

This exploratory study sought to expand adult education research in support of the development of lifelong learning competencies by examining the development of self-directed learning among a group of graduate level military officers attending a 10-month course in a military institution of higher education. The US Army Command and General Staff College (CGSC) was selected for this study because of location to the researcher and availability of a study population. In addition to providing a cohort of Army officers, the Command and General Staff Officer Course had incorporated the following changes: (a) instructional methodologies incorporated adult learning strategies, (b) a mandatory faculty development program to teach instructors, among other adult education practices, the experiential learning model, and (c) a continuous curriculum improvement process which seeks course feedback (U.S. Army Combined Arms Center, 2013).

Background

The Army operates one of the largest adult education programs in the world (Kime & Anderson, 2000) and conducts training throughout the career cycle of each soldier (U.S.

Department of the Army, 2012b). Every month the Army takes in almost 10,000 new recruits through enlistment, the United States Military Academy, various Reserve Officer Training Programs, and direct commissions (Center for Strategic and International Studies, 2014). Every year the Army trains over half a million soldiers in 32 Army training and educational institutions located across the nation (Center for Strategic and International Studies, 2014; O'Bryant, 2014). Given the size of the Army, the Army Reserve, and the Army National Guard, this equates to roughly a quarter of its personnel trained annually (U.S. Army Training and Doctrine Command, 2015). In addition to schoolhouses, the Army employs technology and the internet to conduct training anytime and anywhere a soldier decides they have a need to learn (U.S. Army Training and Doctrine Command, 2011).

A review of Army research and literature indicated an understanding and incorporation of the concepts of adult education into Army training and education (Burlas, 2004; Dougherty, 2010; Fastabend & Simpson, 2004, McKinley, 2005, U.S. Army Research Institute for the Behavioral and Social Sciences, 2010; U.S. Department of the Army, 2011, 2012b). Several years after incorporating the adult education principles into its training and education the Army assessed itself and determined that it "must take immediate action to develop a capacity for accelerated learning that extends from organizational levels of learning to the individual soldier whose knowledge, skills, and abilities are tested in the most unforgiving environments" (U.S. Army Training and Doctrine Command, 2011. p. 5). In order to meet this internal challenge the Army sought to combine the outcomes of self-directed learning, institutional training and education, and personal experience. One method the Army intended to use to assess its progress in developing lifelong learners was to have been a routine and recurring assessment (U.S. Army Training and Doctrine Command, 2011). The Army Learning Concept called for inventiveness and advances in learning technologies and methods in order to meet their goals and conduct assessments (U.S. Army Training and Doctrine Command, 2011).

At the same time the Army sought inventiveness to implement and assess lifelong learning, the concept of lifelong learning and assessment of lifelong learning was established within the field of adult education (U.S. Army Training and Doctrine Command, 2011). Knowles (1972) wrote that the chief missions of the adult educator were the development of the attitude of lifelong learning and self-directed learning. Knowles (1975) sought to better understand adult learning by asking and answering four questions: 1) Why self-directed

3

learning? 2) What is self-directed learning? 3) What competencies are required for self-directed learning? and 4) How to design a learning plan to incorporate self-directed learning? Subsequent adult education literature encouraging self-directed learning has answered Malcolm Knowles questions (Caffarella, 1993). That literature, however, was not consistent. Self-directed learning has subsequently been described as a process, a predisposition, and as a product. The focus of research in the field of adult education has also followed these three descriptions (Brookfield, 1984). The following literature review examined that discourse and suggested a theory that provided a framework from which the Army could assess its development of the twenty first century soldier competency of lifelong learning.

Self-Directed Learning in Adult Education

Self-directed learning is a way of life.

Brockett & Hiemstra (1991)

Lindeman (1926) described education as a continuous aspect of everyday life for an adult. He argued that education was life itself, writing that education was "not merely preparation for an unknown kind of future living… The whole of life is learning, therefore education can have no endings" (Lindeman, 1926, p 4-5). In the years since Lindeman's publication the field of adult education has continued to associate lifelong learning with self-directed learning (Candy, 1991).

Tough established self-directed learning as the primary mode of adult education (Spear, 1988). Fifty studies over the next eleven years revealed a consistent finding regarding the average number of projects conducted annually and the hours spent in learning (Tough, 1982). Cafferella and O'Donnell (1987) reviewed this body of research and found that research questions regarding self-directed learning could be grouped into four categories: (1) the planning process and conceptualization; (2) types of planners; (3) types of learning resources used; and (4) competencies related to method.

Mocker and Spear (1982) later found inconsistencies in how self-directed learning was defined and evaluated in research. In their review of extant adult education research they found that studies that took into account the effect of environmental on adult learning, while also finding studies that did not (Spear, 1988). Mocker and Spear (1982) then chose to organize their

research of self-directed learning on a model accounting for both "control of goals and means of learning" (p. 123).

Brockett and Hiemstra (1991) noted that the lack of common definition caused research to "offer varied, though often subtly different, emphasis" (Brockett & Hiemstra, 1991, p. 18). They found various studies using the terms self-planned learning, self-teaching, autonomous learning, independent study, and distance education interchangeably. Long (2000) reviewed the extant literature and added to the array of discovered terms: self-education, self-learning, autodidaxy, and self-regulated learning.

In addition to the various terms describing self-directed learning, a couple of models provide various alternatives to understand the concept (Candy, 1991; Grow, 1991). Grow's (1991) staged Self-Directed Learning Model focused on the teaching learning transaction and asserted "that learners advance through stages of increasing self-direction and that teachers can help or hinder that development" (p. 125). Candy (1991) viewed self-directed learning as a combination of the learner's personal abilities, the setting, and the social context of the learning and asserted that a goal of learning is the development of self-directedness within the learner.

Brockett and Hiemstra's (1991) conceptualization of self-directed learning, the Personal Responsibility Orientation (PRO) model, was multi-dimensional and involved the characteristics of the learner, teaching – learning transaction, and the social context within which the learning occured. Brockett and Hiemstra (1991) believed that "within the context of learning, it is the ability and/or willingness of individuals to take control of their own learning that determines their potential for self-direction" (p. 26).

Measuring Self-Directed Learning

In addition to the development of adult educational theory regarding self-directed learning adult educators have conducted assessments of adult learning as well as the development of instruments to assess adult learner development (Candy, 1991). Knowles (1975) determined the frequency and nature of self-directed learning projects. Guglielmino (1977) later developed an instrument to measure adult self-directed learning. Oddi, (1984) developed another instrument to measure a learner's inclination toward self-directed learning. These two instruments are now the most widely used instruments measuring self-directed learning (Wood, 1994). Both instruments, however, have been called into question regarding their

appropriateness for measuring self-direction (Brockett, 1985b; Brookfield, 1985b; Landers, 1989; Six, 1987).

Given the aforementioned concerns regarding appropriateness of previously developed instruments to measure self-directed learning, Stockdale (2003) selected the PRO model, which appeared to bridge the two sides of the debate, as the basis for developing a scale that would identify and quantify both the learner components and the learning process. Stockdale's instrument, the Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) was a means "to validate the more recent conceptualization of self-direction presented in the PRO model" (Fogerson, 2006, p. 52).

Self-Directed Learning in the United States Army

The Army Learning Environment

The Army's learning concept for 2015 described the Army's learning model as one of continuous adaptability. In order to achieve this model the Army developed and resourced two goals. The first was to improve "the quality, relevance, and effectiveness of face-to-face learning experiences through outcome-oriented instructional strategies that foster thinking, initiative, and provide operationally relevant context" (U.S. Army Training and Doctrine Command, 2011, p. 17). The second goal was to create a culture of lifelong learning. The Army's plan was to connect its 32 resident, educational institutions to the global operating force through the use of improved technology. The Army also implement instructional methodologies that leveraged technology and achieved the desired learning and educational outcomes. At the same time the learning concept described the addition of rigor to the implementation of their learning model through frequent learner assessments. These assessments were intended to drive change and allow the Army to gauge its level of success in goal attainment (U.S. Army Training and Doctrine Command, 2011).

In conjunction with the development of its learning concept the Army commissioned an internal report seeking strategies that could be used in implementing its learning concept. The authors of the report, *Army institutional training: Current status and future research* (U.S. Army Research Institute for the Behavioral and Social Sciences, 2010) advocated the need to fully understand: the student-relevant characteristics of the Army adult learner population; the applications of learning science; and methods of assessing learning. Within the field of adult

education student-relevant characteristics, applications of learning science, and methods of assessment have been detailed extensively in research on adult education, specifically research regarding the self-directed learner and the self-directed learning process and associated environment (Brockett, 1983, 1985a; Brockett & Hiemstra, 1991; Brookfield, 1985a, 1985b; Caferrella, 1993; Candy, 1991; Hiemstra, 1994, 2002; Knowles, 1975; Mezirow, 1985; Mocker & Spear, 1982; Rager 2006).

In addition to the learner characteristics, the Army delineated the role of its trainers and educators in the development of lifelong learning among its soldiers (U.S. Army Training and Doctrine Command, 2011). The authors of the Army's learning concept tasked Army instructors to develop the habits of expert, self-motivated learning within their adult learners. The Army's learning model combined the strategies of adult education, faculty development, and learner responsibility in order to achieve an Army culture of lifelong learning that encouraged critical thinking, complex problem solving, and gave soldiers immediate access to relevant, performance-related information (U.S. Army Training and Doctrine Command, 2011).

In addition to instructor development and learning strategies, the authors of the Army's learning concept desired to cultivate within the Army's soldiers the malleable learner characteristics of cognitive ability, self-efficacy, and motivation through specific learning strategies such as mastery experiences and supportive feedback (U.S. Army Research Institute for the Behavioral and Social Sciences, 2010). The Army's educational leadership understood the need to modify the delivery of courses in order to activate the learner's prior knowledge in order to better enable learning new knowledge (U.S. Army Training and Doctrine Command, 2011). Implementation of these strategies was intended to make the soldier better able to integrate new knowledge into everyday practices as described by Merrill (2013). In order for instructors to engender expert behavior in their students, they had to possess a deep understanding of multiple content areas and be able to make the connections between them (U.S. Department of Education, 2010). Finally, well-designed learning should incorporate deliberate strategies to ensure learning transfers from the learning environment to the operational environment (Clark, 2008).

Beyond implementing these changes the Army's educational leadership intended to develop learner assessment methodologies that integrated technology and its global presence. The Army's training and educational assessment strategy, however, measured training and

learning objectives in terms of achievement of specified standards, not the development of cognitive competencies (U.S. Army Training and Doctrine Command, 2011). Accompanying this disconnect in assessment strategies were the following environmental conditions impacting the Army in the foreseeable future: (a) the Army ended over a decade of war and will need to restructure its training capability and capacity to meet future requirements with limited peacetime funding; (b) the Army will need to rapidly incorporate and deliver innovation in training; and (c) the Army will need to recover from a decade of conducting wartime operations in lieu of training (U.S. Army Training and Doctrine Command, 2013). This latter task will require the Army to "re-invigorate capabilities that have declined, develop new capabilities for the changing world, and adapt processes to reflect the broader range of requirements" (U.S. Department of the Army, 2012a, p. 1).

Significance of the Study

This nation's largest educator of adults has significantly modified its learning strategy in terms of curriculum and faculty development and has incorporated the principles of adult education in order to create a culture of lifelong learning (Burlas, 2004; Dougherty, 2010; Fastabend & Simpson, 2004; McKinley, 2005; U.S. Army Research Institute for the Behavioral and Social Sciences, 2010). The Army also sought innovation in assessing its goal of inculcating the competency of lifelong learning (U.S. Army Training and Doctrine Command, 2011). This exploratory study provided both a theoretical framework through which to understand the development of lifelong learning within the Army as well as provide an associated instrument to assess that development.

Problem Statement

While the Army recognized the need to assess its progress as it moved to develop 21st century soldier competencies throughout the force, it did not possess an instrument or methodology to assess the development of those competencies (King, 2011; U.S. Army Training and Doctrine Command, 2011). The lack of measurement and assessment of desired competencies made the Army's development of future training strategies difficult in terms of design and the desired outcome of developing lifelong learners (Blanchard & Thacker, 2013).

Purpose Statement

The purpose of this exploratory study was to propose an assessment strategy for the Army as it sought to develop lifelong learners, the study also sought to inform implementation and assessment strategies in both the private and broader public sectors, specifically companies and organizations seeking to develop lifelong learners in the furtherance of creating or sustaining a learning organization. Finally, this study sought to assess current adult education strategies associated with the development of self-directed learning contained in the literature and to provide new insight to the field of adult education by examining the Army's fostering of self-directed learning among its officer corps.

To accomplish these tasks this study applied the PRO model and its associated instrument, the PRO-SDLS (Appendix A), to assess change in the levels of self-directed learning among Army mid-grade officers over the duration of a 10-month graduate level resident course. By using the PRO-SDLS both the "instructional method processes (self-directed learning) and personality characteristics of the individual learner (learner self-direction)" (Brockett & Hiemstra, 1991, p.26) were assessed. This research took place at the midpoint of the Army officer's career-long professional military education, the United States Army Command and General Staff Officer's Course (CGSOC). The study sought to better understand the development of self-directed learning within Army formal education.

Research Questions

This study is designed to answer the following research questions:

1. Does the level of self-directed learning change from pretest to posttest among the Army student population of the Army's Command and General Staff Officer's Course? If so, how and to what extent.
2. Does a change in the level of self-directed learning correlate to the learner characteristic of gender (male, female)? If so, how and to what extent.
3. Does a change in the level of self-directed learning correlate to the learner characteristic of race/ethnicity (White, Non-White)? If so, how and to what extent.

4. Does a change in the level of self-directed learning correlate to the learner characteristic of level of education (bachelor's degree, master's degree)? If so, how and to what extent.

5. Does a change in the level of self-directed learning correlate to the learner characteristic of branch of Army (operations, operations support, force sustainment, special staff)? If so, how and to what extent.

Theoretical Framework

This study employed the PRO model which incorporates two separate but related self-directed learning concepts. On the one hand self-directed learning is viewed as an instructional process that allows a learner to assume primary responsibility for their learning (Houle, 1961; Knowles, 1975; Tough, 1979; Mocker & Spear, 1983) . On the other hand it is viewed as a personality characteristic in which the learner prefers to take responsibility for their learning (Knowles, 1975; Guglielmino, 1978; Cross, 1981; Kasworm, 1983). Using this model, self-directed learning can be viewed as both a teaching learning transaction and a learner characteristic all affected by the learning environment (Brockett & Hiemstra, 1991).

Methodology

This exploratory study analyzed changes in self-directed learning of Army officers attending the Army's Command and General Staff Officers Course (CGSOC) by applying a quasi-experimental, pretest posttest, comparative approach based on the attribute independent variables gender, race/ethnicity and level of education, and branch of Army. The study began with a pilot administration of the PRO-SDLS. The PRO-SDLS provided results for four dependent variables: learner initiative, learner self-efficacy, learner control, and learner motivation. The additional four dependent variable scores improved the one-group pretest posttest design beyond that provided by an instrument yielding a single score (Gliner, Morgan, & Leech, 2009).

Population

The population for this study was the Army officers selected to attend the Command and General Staff Officer Course in residence. A group of senior Army officers first selected these officers for promotion to the rank of major based on history of performance, education, and

training. Those selected for promotion to the rank of Major were then considered for attendance at resident CGSOC. The officers in this study were selected for attendance at the residence course and most were promoted to major by the time they attended the course (Tice, 2012). The entire student population of Army officers (n=836) was accessible to the researcher.

Sample Selection

Within the first week of arrival all 836 Army officers were sent the pretest PRO-SDLS via e-mail. The e-mail began with an introductory statement regarding the study and an invitation to voluntarily take the online survey. This e-mail was repeated the following week to those who had not already taken the survey. A third e-mail request was sent the succeeding week as a reminder to complete the PRO-SDLS. A total of 178 responses were received; however, 20 surveys were not fully completed resulting in pretest results for 158 Army officers submitted. This resulted in a 19 percent response rate.

In the middle of April 2015 the 158 Army officers who completed the pretest administration of the PRO-SDLS received an e-mail inviting them to take the posttest administration of the PRO-SDLS. The following week the first reminder e-mail was sent to those who had not already taken the posttest administration of the PRO-SDLS. During that week the CGSC's Quality Assurance Office notified the researcher that the certification for the survey instrument had been suspended by the Army and that the survey would be suspended. At the point of surrender, 48 respondents had submitted their surveys; however, only 40 respondents completed all 25 questions. This resulted in a 25 percent response rate from the pretest population.

Procedures

In 2014 CGSC conducted two face-to-face courses. The first course began in February and ran through December. The second course began in August and ran through June 2015. The February to December class served as the pilot population and the August to June class served as the study population for this research. The August to June course began in late August 2014.

The pretest administration of the PRO-SDLS contained additional demographic questions regarding gender, race/ethnicity, level of education and branch of Army. The posttest administration contained additional narrative questions providing respondents a chance to express their belief in change over the course of the CGSOC beyond the ability provided by a

Likert scale response. As a result of surrendering use of the survey instrument midway through the posttest administration period; however, the narrative responses were not associated with the pretest administration demographic data and therefore could not be matched for analysis by independent variable.

To protect the identity of the respondents, the CGSOC Quality Assurance Officer created a unique identifier for each Army officer and replaced the student's name with the unique identifier on both the pretest and posttest administrations of the PRO-SDLS. Doing this allowed the researcher to match tests without revealing the identity of the respondents to the researcher. As a result of surrendering use of the survey instrument; however, the narrative responses were not associated with the unique respondent identifier and therefore could not be associated with the pretest administration containing the demographic data.

Instrumentation

This exploratory study used an already developed and assessed instrument, the PRO-SDLS. The PRO-SDLS instrument was developed to measure both the teaching learning transaction as well as the learner characteristics of self-directed learning (Stockdale, 2003). The PRO-SDLS provides results for four dependent variables, learner control, learner initiative, learner motivation, and learner self-efficacy. Learner initiative and learner control assess the teaching learning transaction and learner self-efficacy and learner motivation assess the learner characteristic (Stockdale, 2003).

The PRO-SDLS utilized a 5-point Likert response scale to reflect student's degree of agreement or disagreement with statements pertaining to self-perceptions of their actions and beliefs in self-directed learning opportunities. Development of the PRO-SDLS by Stockdale (2003) incorporated input regarding student demographics, professor ratings of students' self-directedness, and expert opinion regarding the appropriateness of the survey questions. Development of the PRO-SDLS also included assessment against an already well established survey instrument the Self-Directed Learning Readiness Scale, SDLRS (Stockdale & Brockett, 2011).

Stockdale and Brockett (2011) established reliability for the PRO-SDLS and the instrument has been shown to be highly reliable at the undergraduate and graduate levels of education. Research conducted in the development of the PRO-SDLS indicated a link between

self-direction as measured by the PRO-SDLS and success at the undergraduate and graduate levels of education (Stockdale, 2003). While the U.S. Army's Command and General Staff College does not issue a graduate degree for attendance, all students are beyond the undergraduate level of education making this instrument suitable for this study.

Limitations

As an exploratory study this research had inherent limitations. This study; however, experienced an unanticipated reduction in the post-test survey timeframe cutting short the collection of post-test survey results. The Department of Defense authorization to use the survey software expired between the pretest and post-test administration. While the software was reinstated in time for the post-test, the break in usage prevented the software from matching the pretest to the post-test. It was possible to manually match the pretest to posttest scores; however, the narrative comments on the posttest could not be matched with the demographic data submitted on the pretest. The inability to match narrative responses to demographic data limited the analysis based on the independent variables of gender, race/ethnicity, level of education, and branch of Army.

An additional limitation of the study due to the surrender of the survey software by Department of Defense during the post-test period was the shortening of the posttest survey period. Unfortunately, the unforeseen surrender of the survey software meant that a third reminder was never sent and the survey closed a single day after the second reminder. This created an unforeseen mortality limitation to the study.

In addition to mortality the following limitations apply to this study:

1. As a result of the small sample size (n=40) the results are not generalizable;
2. The results of this study are exploratory in nature;
3. The results are limited by the use of an online survey;
4. The results are limited by psychometric features of the PRO-SDLS;
5. The results of this study are limited by the accuracy and the truthfulness of the respondent's self-reported data.

Definition of Terms

Control: The ability and/or willingness of the learner to take control of their own learning.

Brockett and Hiemstra (1991) derived this definition from Chene's (1983) definition of

autonomy, "Autonomy refers to one's ability to choose what has value, that is to say, to make choices in harmony with self-realization" (Brockett & Hiemstra, 1991p. 39).

Initiative: Exercising primary decision making authority, with or without the input of others, in diagnosing individual learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes (Knowles, 1975).

Lifelong Learning: Individual lifelong choice to actively and overtly pursue knowledge, the comprehension of ideas, and the expansion of depth in any area to progress beyond a known state of development and competency (U.S. Army Training and Doctrine Command, 2011).

Motivation: "An individual's beliefs and attitudes that predispose one toward taking primary responsibility for their learning" (Brockett & Hiemstra, 1991, p. 29), and "a learner's desire or preference for assuming responsibility for learning" (Brockett & Hiemstra, 1991, p. 24).

Self-directed learning: "A process where the learner assumes primary responsibility for planning, implementing, and evaluating a learning experience" (Brockett, 1985a, p. 211).

Self-efficacy: Refers to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p.3). Also refers to "peoples' judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391).

Training: An organized, structured process based on sound principles of learning designed to increase the capability of individuals or units to perform specified tasks or skills. Training increases the ability to perform in known situations with emphasis on competency, physical and mental skills, knowledge, and concepts (U.S. Army Training and Doctrine Command, 2011).

Summary

This chapter established the context for this study and linked that context to adult education, specifically the close bond of self-directed learning to lifelong learning within adult education literature. It then described the Army's adult learning environment and proposed a model against which to assess changes in self-directed learning within that environment and introduced an instrument to measure that change. Chapter 2 will provide greater detail on the

development of both lifelong learning and self-directed learning as well as other aspects of this study.

Chapter 2 - Review of the Literature

Introduction

This chapter summarizes the key elements of literature related to this research. The literature review is presented in six sections. The first section provides the linkage between lifelong learning and self-directed learning present in adult education literature. The second section reviews the development of the concept of self-directed learning within the field of Adult Education and the disparate self-directed learning concepts present in the literature. The third section reviews the philosophical foundations of self-directed learning and the development of the Personal Responsibility Orientation (PRO) model. The fourth section reviews self-directed learning and the diversity of the adult learner population in terms of what has been found through research regarding association of demographics and self-directed learning. The fifth section of this chapter discusses self-directed learning in the United States Army. The final section describes the U.S. Army Command and General Staff College.

Lifelong Learning

The Army Learning Concept for 2015 (U.S. Army Training and Doctrine Command, 2011) required the Army to foster a culture of lifelong learning. It defined lifelong learning as "a choice to actively and overtly pursue knowledge, the comprehension of ideas, and the expansion of depth in any area to progress beyond a known state of development and competency" (U.S. Army Training and Doctrine Command, 2011, p. 63). While the definition limited lifelong learning to a choice, the document itself was not consistent in how it described lifelong learning. The term lifelong learning was used 16 times and the term lifelong learner was used five times. While the term lifelong learner was associated with digital literacy three times, distance learning was only associated with the term lifelong learning once. Of the 16 times lifelong learning was used, it was inconsistently described. It was either described in terms of lifelong learning objectives, accomplishments, mindset, culture or model. With the exception of the definition of lifelong learning provided in the glossary, the word "choice" was not employed anywhere in the description of lifelong learning (U.S. Army Training and Doctrine Command, 2011). Research on the subject of lifelong learning revealed a similar lack of conformity within and among

studies and academic articles regarding lifelong learning (Aspin & Chapman, 2000, Aspin, 2007).

The concept of lifelong learning as a titled entity entered the literature in the 1970s as a result of the publications of three international bodies: the Council of Europe, the Organization for Economic Co-operation and Development (OECD), and the United Nations Educational, Scientific and Cultural Organization (UNESCO) (Schuler & Megarry, 2006). The European Council advocated for permanent education for the whole life span. OECD called for recurrent education, alternating between full-time work and full-time study. UNESCO's report *Learning to Be* (Faure, et al., 1972) commonly referred to as the Faure Report used the term lifelong education instead of lifelong learning (Faure, et al., 1972).

These publications caused U.S. educational and political leaders to consider the impact of lifelong learning on the American population (Aspin, 2007). On the political side, the Mondale Lifelong Learning Act of 1976 amended the Higher Education Act of 1965 and included a list of learning activities ranging from adult basic education to education for retired persons. The Lifelong Learning Act defined lifelong learning as:

> Any program, project, activity, or service designed to meet the changing needs of Americans throughout their lives, and includes, but is not limited to, adult basic education, postsecondary education, continuing education, or remedial educational programs for groups or for individuals with special needs, job training programs, and preretirement and post retirement training, and education programs for the elderly. (Mondale, 1976, p. 384)

The act also called for the creation of an Office of Lifetime Learning within the Office of Education. The roles and responsibilities assigned to the Director of the Office for Lifetime Learning included such things as identifying all programs extant that met the conditions of the definition for lifelong learning. It required an evaluation of foreign and domestic programs in order to discern best practices. It required a study to determine the barriers to participation and recommendations for how to remove those barriers. It called for research and activities to support educators involved in lifelong learning and the development of appropriate curriculum (Schuler & Megarry, 2006).

Candy (1991) noted that Brockett, Gibbons, Phillips, Skager, and UNESCO incorporated his concept of autodidaxy into lifelong education, which he cautioned was difficult to do as the

concept of lifelong education was a "notoriously nebulous and fluid construct" (Candy, 1991, p. 75). Candy wrote that the concept of lifelong education differed from the traditional model of education in that lifelong education sought to encompass the entire lifespan and to reduce barriers to education for the duration of a lifetime. As such it was to be an environmental entity not the interior drive Candy referred to as autodidaxy. Candy (1991) noted that lifelong education included all informal education and concluded that given the momentum accompanying the pursuit of lifelong education, adult educators "would be better employed devising some means to foster self-directed learning and help it to take place productively and efficiently" (p. 77).

Several researchers in adult education have also linked self-directed learning with lifelong learning employing both qualitative and quantitative methods in their research. Damianoff (2010) qualitatively examined adult learning from the aspects of self-directed learning, lifelong learning, and transformative learning. He acknowledged that "lifelong learning is often conceptualized as a vocational plan of academic upgrading that almost invariably refers to formalized courses within a process of schooling (Damianoff, 2010, p. 3). Damianoff's research, however, only examined the informal aspects of learning. He therefore restricted his definition to examine only that learning that bound an individual to a community. He interviewed eight historical reenactors and found that lifelong learners are both internally and externally motivated therefore he concluded that adult educators can develop educational structures in order to engage the adult learner through social interaction in order to create an effective learning community (Damianoff, 2010).

Peterson (2010) conducted a quantitative study of over 300 postsecondary educators and their approaches to online learning regarding the concepts of self-directed learning and lifelong learning. Peterson grouped both self-directed learning and lifelong learning into the process of learning. He cited Jarvis (2006) in his definition of lifelong learning. Peterson defined lifelong learning as:

> The combination of processes whereby the whole person experiences ... social situations, the perceived content of which is then transformed cognitively, emotively or practically … and integrated into the individual person's biography resulting in a constantly changing (or more experienced) person. (Peterson, 2010, p. 24)

Peterson went on to depict lifelong learning as learning supported by employers attempting to involve the whole person. He found that self-directed learning can be fostered in the adult learner and provided e-learning faculty with recommendations to improve their curriculum in order to engender self-directed learning (Peterson, 2010).

Norman (2011) conducted a qualitative action research study of a library program in Delaware from 2007 to 2010. The study examined the phenomenon of "self-directed, lifelong learning" (Norman, 2011, p. 6) by examining 685 voluntary participants in 48 different learning endeavors referred to as journeys. Norman (2011) referred to her study as "an action research project designed to explore the phenomenon of self-directed lifelong learning in public library users and to help librarians learn more about customers' learning processes" (p. 6). While Norman did not define lifelong learning she attached the adjective informal to lifelong learning throughout her dissertation. As a result of her research Norman (2011) provided recommendations for library policies and approaches to best service the needs of adult learners in order to support self-directed and lifelong learning.

Among the quantitative research in the field there are several that employ self-directed learning instruments to measure lifelong learning abilities. White (2001) used the Oddi Continuing Learning Inventory (OCLI) to determine significant learner attributes that best correlate to lifelong learning in order to select interviewees for a follow-on qualitative study. White chose the OCLI because Oddi differentiated between self-directed learning as it related to the "ability to engage in self-directed instruction" (Oddi, 1984, p. 6), and self-directed continuing learning which Oddi described as a person's ability to initiate and persist in learning over time. This is the phenomena White referred to as lifelong learning and is the reason he chose the OCLI. While not defining lifelong learning, White (2001) found that lifelong learners' participation in small groups was not directed toward acquiring new knowledge but rather directed at acquiring new ways of thinking and perceiving.

Blatt (2007) employed a mixed methods study to examine the relationship between early integration of self-directed learning behaviors and their manifestation in adulthood. Blatt (2007) defined lifelong learning as a "continuous educational process that promotes self-enrichment based on originality, expressiveness, and imaginativeness" (p. 68). In the qualitative portion of the study, Blatt utilized Guglielmino's SDLRS. Blatt found that frequent application of the task

19

learned had the greater developmental impact and influence on creativity, lifelong learning, self-awareness and acceptance of responsibility for one's learning (Blatt, 2007).

Miller (2012) used the Self-Directed Learning Readiness Scale (SDLRS) to test the development of lifelong learning skills among physicians. Miller defined lifelong learning as "the continuous building and development of knowledge and skills, people attain throughout their lives, through formal or informal experiences" (Miller, 2012, p. 13). Miller demonstrated that self-directed learning as a means to encourage lifelong learning was becoming more accepted in medical education. Li, Paterniti, Patrick and West (2010) that found that self-directed learning skills linked with reflective practice provided the lifelong learning skills for physicians to produce positive patient care outcomes.

These studies indicated that lifelong learning can be fostered. Additionally, they indicated a link between lifelong learning and self-directed learning. None of these studies however, examined a formal, resident, learning environment. All the reviewed studies, regardless of how they defined or measured lifelong learning, bound their research to the practices and research associated with self-directed learning.

Self-Directed Learning Foundations

Influenced by Ralph Waldo Emerson's philosophy of Transcendentalism, which professed a faith that people are self-reliant and independent, and by John Dewey's pragmatism, which believed that thought is an instrument for prediction, action, and problem solving, Lindeman approached the study of adult learning from a pragmatic worldview (Brookfield, 1984). Lindeman (1926) published five key assumptions about adult learners:

Seeking to understand adult learning and make predictions about adult learners in general, Lindeman (1926) published five key assumptions about adult learners:

1. Adults are motivated to learn as they experience needs and interests that learning will satisfy,
2. Adults' orientation to learning is life-centered,
3. Experience is the richest source for adults' learning,
4. Adults have a deep need to be self-directing, and
5. Individual differences among people increase with age.

Lindeman (1926) described an approach to the study of adult education based on the context of the learner. He found that the context itself became the catalyst for adults to employ their intellect and this then caused them to seek out subject matter experts. Lindeman believed that each individual's context was unique and changing and this change in turn placed further demands on adults to learn. He wrote, "Since life is growth—continuous change—and since environments are never static, new situations are forever arising, and each new situation confronted makes fresh demands upon intelligence" (Lindeman, 1926, pp. 25-26).

This potentially continuous demand on intelligence, according to Lindeman, drove adults to direct their learning within the context of their life experiences. This belief drove Lindeman's advocacy for adult education curriculums to be built around the need and interests of the adult learner. Lindeman (1926) believed that curriculum should be:

1. Conterminous with the learner's life,
2. Revolve around non-academic and non-vocational ideas,
3. Should start with the lives of the learners, and
4. Should look to the learner's own experience as its most valuable resource.

While Lindeman concluded that context, not a teacher, drove adults to learn, he did not identify nor define the concept of self-directed learning.

Houle (1961) interviewed 22 adult learners. As a result of the interviews he developed three goals that drove adults to learn

1. Goal-oriented,
2. Activity-oriented, and
3. Learning-oriented.

Tough (1967) provided the first comprehensive description of self-directed learning by identifying its elements. During his doctoral research at the University of Chicago under Houle, Tough studied the behavior of adults planning their own learning. Tough (1967) presented his findings in his doctoral dissertation and later in *Learning Without a Teacher: A Study of Tasks and Assistance During Adult Self-Teaching Projects.* Tough's findings demonstrated how an adult can and does learn unaided by a teacher (Kasworm, 1992).

Building on this work, Tough (1979) discussed the results of his research about the self-directed nature of adult learning and expanded the findings of his doctoral research. His findings were based on a number of studies he conducted in Ontario, Canada, examining the frequency

and nature of adults' self-directed learning which he called adult learning projects. To conduct his research Tough developed an interview protocol wherein he conducted an hour-long, open-ended interview asking the adult about learning they had done in the previous year (Bonham, 1992). Interpretation of Tough's research varies among adult educators. Penland (1977) found that Toughs research found that 79 percent of the adults observed conducted at least one learning project per year, while Coolican (1974) found that 100 percent of the adults conducted at least one learning project per year.

As a result of this research Tough defined a learning project as "a highly deliberate effort to gain and retain certain definite knowledge and skills, or to change in some other way" (Tough, 1978, p. 250). Tough's research also revealed that adults engaged in many activities when they engaged in learning. Of those activities Tough determined that 73% were self-planned and were similar in nature and design to the activities conducted by teachers when they developed course curriculum (Bonham, 1992; Tough, 1978). While Tough determined that over 70% of the learning project was planned independently by the adult learner, learning did not occur in isolation. The learner, he found, sought expertise from acquaintances, experts and printed material. Tough (1978) also found that the typical adult received information, advice and help from ten people and everyone he observed received help from at least four people.

Tough also studied the adult learner's motivation to engage in learning. He found that the chief motivator for adults was goal oriented and that few projects were done for the love of learning. Tough (1978) published an article in *Adult Education* in which he stated his conclusion that adults independently and naturally perform many of the curriculum development tasks executed by teachers. He then used this discovery to challenge teachers to do more than just pass on information. Tough (1978) concluded and recommended that teachers have a responsibility to teach adults how to teach themselves.

As a result of interviewing 200 individuals Tough (1979) expanded his definition of a learning project to include a time component. He described a learning project in terms of a series of related episodes adding up to a total of seven hours. He also more clearly delineated the role of personal motivation. "In each episode, more than half of the person's total motivation is to gain and retain certain fairly clear knowledge and skills and to produce some other lasting change" (Tough, 1979, p. 6).

Tough concluded that these learning projects were the result of a personal question, goal, desired outcome, or intention. He found that these personal questions, goals, desired outcomes, and intentions drove learning projects. Tough also found that learning projects resulted in the discovery of unknown knowledge or insight. This discovery then became the launching point for the adult learner to discover yet another unknown fact or achieve another insight (Cross, 1981).

Tough (1979) referred to each of these segments of discovery as episodes. He then applied his seven hour time commitment in order to distinguish a learning activity from a learning project (Tough, 1979). He concluded that in a learning project adults are active participants and that the learner organizes and regulates the focus, action and evaluation of the learning experiences. Through his research and discovery he concluded that the adult learner retained executive control over their learning experience. In making these discoveries Tough established self-directed learning as distinct from teacher directed learning in terms of motivation and outcome, even though the processes themselves resembled each other (Kasworm, 1992).

Tough (1979) also attempted to further explain why adults pursue self-planned learning. Through his research Tough found that many adult learning projects were related to a job or occupation and that the learner derived pleasure, satisfaction, and enhanced self-esteem from their learning project. In examining the process that the learner moves through in deciding to conduct a learning project Tough decided to study the involvement of external factors. The focus of this research was an attempt to discern what drove an individual to select a learning resource. Tough's research revealed several factors influencing resource choices. He found efficiency cited most often as the primary criterion for adults in deciding upon a learning resource.

A contemporary of Tough, Knowles (1973) examined self-directed learning from the perspective of learner characteristics rather than a learning process. Knowles (1973) used the term "self-directed learning" for the first time in adult educational literature. He also published a list of skills necessary for adults to engage in self-directed learning. These skills included: the ability to develop and be in touch with curiosity; to perceive one's self objectively and accept feedback; to diagnose one's learning needs in regard to performing life roles; to formulate learning objectives; to identify human, material, and experiential resources; to design a plan of strategies for making use of appropriate learning resources; to carry out a learning plan

systematically and sequentially; and to validate the achievement of learning objectives (Knowles, 1973).

Knowles (1975) defined self-directed learning as "a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes" (p. 18). He described the main purpose of education as the development of the skills of inquiry and provided the assumptions and definitions that guided much of the subsequent research on self-directed learning (Knowles, 1975).

Knowles (1975) believed that adult learning is a part of the natural process of human psychological development. In comparing the human maturation process with the development of learning projects he came to the conclusion that both the development of distance learning programs and the development of nontraditional study programs placed the responsibility to learn on the learner taking initiative. He included a self-assessment exercise and a list of learner competencies necessary for the successful completion of a self-directed learning project (Knowles, 1975).

The significance of the works of Houle, Tough, and Knowles was the influence they had on resulting definitions of self-directed learning (Gerstner, 1992; Knowles, 1975; LeJuene, 2001; Piskurich, 1993). Influenced by the legacy of John Dewey and the writings of Lindeman and Houle, Knowles (1975), like Tough (1971), stressed that self-directed learning is not an isolated process and advocated that self-directed learning took place in association with various kinds of helpers, such as teachers, tutors, mentors, resource people, and peers.

Figure 2.1. The Evolution of Self-Directed Learning
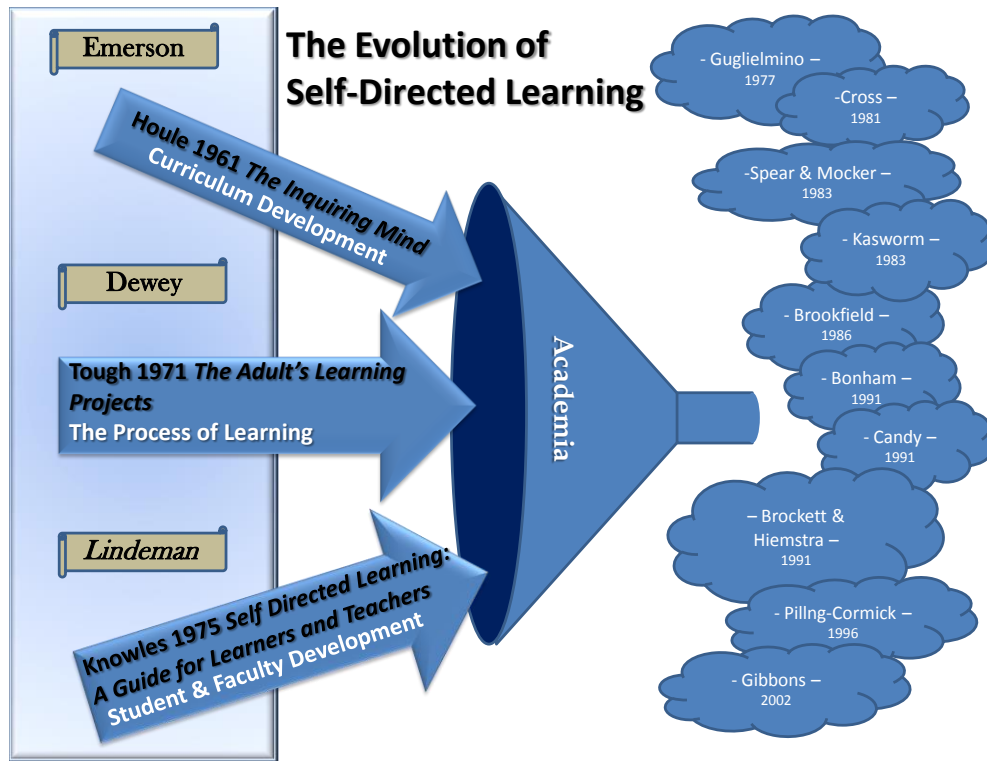
Figure 2.1. A number of writers and researchers were responsible for launching the dialogue on self-directed learning within the field of adult education resulting in a diversity of viewpoint and understanding of self-directed learning.

Self-Directed Learning as a Learner Characteristic

Knowles (1975) stated that one of the competencies of a self-directed learner is a "concept of themselves as nondependent and self-directing" (Knowles, 1975, p. 64). He listed eight competencies of self-directed learning: (1) an understanding the differences in skills required for self-directed learning as opposed to teacher led instruction; (2) an ability to work collaboratively with peers; (3) an ability to self-diagnose learning needs; (4) an ability to express needs as learning outcomes; (5) an ability to relate to teachers as aides rather than task masters; (6) an ability to identify learning resources; (7) an ability to select appropriate learning strategies and complementary resources; and (8) an ability to assess achievement of the learning goal. Long (1992) divided these competencies into three categories: cognitive, inter-personal, and personal. Long noted that none of these competencies included skills such as reading, writing,

observation, record keeping or processing of information. Long and associates (1990) also believed that self-directed learners should possess processing skills.

Guglielmino (1977) examined adult learners and found that highly self-directed learners possess initiative, independence and persistence. Adult learners take ownership of their learning and view problems as challenges rather than obstacles. She described the self-directed learner as possessing a great degree of curiosity, desire to learn, and self-confidence. Guglielmino (1977) found that self-directed learners were able to organize their activities and develop a plan for completing work. In studying an adult's motivation to learn Guglielmino found self-directed learners were goal oriented. According to Guglielmino (1977), "self-directed learning can occur in a wide variety of situations, ranging from a teacher-directed classroom to self-planned and self-conducted learning projects" (p. 34).

Cross (1981), who like Guglielmino, focused her research on the adult learner, published the characteristics of adult learners based on her research of three adult learning venues: self-directed, organized instruction, and degree-credit. In addition to delineating the characteristics of adult learners, Cross defined self-directed learning as "deliberate learning in which the person's primary intention is to 'gain certain definite knowledge or skills'" (Cross, 1981, pp. 186-187). Cross' research revealed that formal learning constituted only a small portion of most adult learning and that the majority of adult learning took place informally.

Kasworm (1983) wrote that self-directed learning can be viewed as a "set of generic, finite behaviors; as a belief system reflecting and evolving from a process of self-initiated learning activity; or as an ideal state of the mature self-actualized learner" (p. 3). Kasworm examined self-directed learning along the continuum of lifelong learning and found the behaviors inherently interwoven within a foundation of both individual cognitive and contextual characteristics. Kasworm therefore contended that researchers should examine both the theory and the application of self-directed learning, examining the externally-defined process as well as the internal process of continual cognitive and human psychological development. Kasworm believed that such a holistic perspective suggested a three-dimensional framework based on level of behavior and skill to engage in self-directed learning; level of cognitive complexity to engage in self-directed learning; and the level of affective value toward knowledge and learning actions. Kasworm (1983) found that specific developmental changes caused by the learner interacting with their environment had to occur in order to move the learning forward.

Brookfield (1986) claimed that previously proposed definitions had been skewed by those who choose to define self-directed learning based on choice of content and process. Bonham (1991) understood self-directed learning as a learning style. Bonham contended that "While there are many definitions of self-directed learning, the most useful are the ones that deal with the circumstances of learning" (p. 53).

Long and associates (1994) added field independence, locus of control, and self-efficacy to the attributes of a self-directed learner. Garrison (1997) suggested adding motivational factors such as critical thinking and meta-cognition as additional personal characteristics. Taylor (2006) pointed out that the question remained whether these characteristics were dispositional or predispositional.

Self-Directed Learning as a Process

While many adult educators endeavored to discern the characteristics of self-directed learners Mocker and Spear (1982) studied the process of self-directed learning. They interviewed adults who had less than a high school education. Mocker and Spear (1982) found that rather than a predetermined process developed after a learning goal had been decided upon, learners limited the process of learning to their environment and the resources at hand.

Mocker and Spear (1982) published their work in defining self-directed learning and described it as "characterized by a process in which the learner has control over both the goals and the means for learning" (p. 4). Introducing the concept of locus of control over the making of decisions regarding continuing learning in adulthood, Mocker and Spear developed a two-by-two matrix to model their concept. The model contains four situations for learning: *formal*, in which learners have little to no control over the objectives or means of learning; *nonformal*, in which learners control the objectives but not the means of learning; *informal*, in which learners control the means but not the objectives of learning; and *self-directed*, in which learners control both the objectives and the means of learning. According to Mocker and Spear (1982), this model can be used to examine the state of learner self-directedness.

Mocker and Spear (1982) concluded that their definition "doesn't mean that the reasons for learning must be controlled by the learner, but it does mean that once the decision is made to learn something that the learner controls what will be learned and how it will be learned" (pp. 199-200). They found the process of self-directed learning to be a sequence of four events.

First, the adult experienced a "triggering event" or a change in life circumstances. Second, the changed circumstance became an opportunity for learning. Third, the circumstances of the event directed the structure, method, resources, and condition for learning. Finally, the circumstances in one episode created the circumstances for the next resulting in a continuing and sequential process (Merriam, Caffarella & Baumgartner, 2012).

In reviewing this discourse about self-directed learning as a learner characteristic on the one hand and then as a process on the other, Brockett (1985a) defined self-directed learning as "a process where the learner assumes primary responsibility for planning, implementing, and evaluating a learning experience" (Brockett, 1985a, p. 211). Caffarella and O'Donnell (1987) found that self-directed learning as a process began with the learner having a clear idea of what they needed to learn and then proceeded to the development of steps they needed to accomplish in order to meet their goal. Caffarella and O-Donnell (1987), however, concluded that more needed to be understood about the impact of environment on the conduct of learning projects.

Candy (1991) distinguished between the method of self-directed learning and the goal of self-directed learning. Candy divided self-direction into two domains: learner control, in which the learner maintains primary control over learning while at the same time the teacher maintains some degree of control; and autodidaxy, in which the learner may not even be conscious that he or she is learning. Candy developed his description by critically analyzing how the term 'self-direction' appeared in the literature. Through a review of literature and synthesis of research findings he concluded that:

> The term self-direction actually embraces dimensions of process and product, and that it refers to four distinct (but related) phenomena: "self-direction" as a personal attribute (personal autonomy); "self-direction" as the willingness and capacity to conduct one's own education (self-management); "self-direction" as a mode of organizing instruction in formal settings (learner control); "self-direction" as the individual, noninstitutional pursuit of learning opportunities in the "natural societal setting" (autodidaxy). (Candy, 1991, pp. 22-23)

Pilling-Cormick (1996) provided a definition of self-directed learning that expanded on Brockett's definition and included incorporation of learner characteristics. Cormick wrote self-directed learning was:

A process where students have the opportunity to play an active role in developing a system of meanings to interpret events, ideas or circumstances. They determine their priorities; choose methods, and various available resources to carry out the learning. This process reflects both characteristics of the learning and facilitating processes and the influence of control. (Pilling-Cormick, 1996, p. 10)

Gibbons (2002) wrote that "Self-directed learning is any increase in knowledge, skill, accomplishment, or personal development that an individual selects and brings about by his or her own efforts using any method in any circumstances at any time" (p. 2). In light of the ever growing number of definitions Owen (2002) re-examined the literature and the myriad definitions associated with self-directed learning and attributed the variance to "haphazard nomenclature" (p. 1).

Self-Directed Learning and Environment

In examining the impact of environment on the self-directed learning process Spear (1988) commented that Tough and Knowles may have been influenced by their knowledge of the planning process employed in formal settings and that this influence may have driven their findings. Spear (1988) found that the environment appeared to serve as a limiting factor in the structuring of learning projects.

Brockett and Hiemstra (1991) found that individual adult educator's views of self-directed learning changed over time. Brockett and Hiemstra cautioned that when examining definitions of self-directed learning it was prudent to know who offered the definition and when they proposed the definition. Rather than advocating self-directed learning as either a characteristic or a process, Brockett and Hiemstra (1991) claimed that "self-directed learning referred to both the external characteristics of an instructional process and the internal characteristics of the learner, where the individual assumes primary responsibility for a learning experience" (p. 24). This definition was the merging of their previously held, respective definitions. Earlier Hiemstra (1976) defined self-planned learning as a learning activity that is self-directed, self-initiated, and frequently carried out alone (p. 39). Brockett (1983) had previously defined self-directed learning as referring to "activities where primary responsibility for planning, carrying out, and evaluating a learning endeavor is assumed by the individual learner" (p. 16).

Brockett and Hiemstra (1991) merged their two definitions by agreeing to move away from the term self-directed learning and adopting the term self-direction in learning. In doing this, self-direction in learning referred to two distinct but related dimensions. The first dimension was a process in which a learner assumes primary responsibility for planning, implementing, and evaluating the learning process. The second dimension then referred to learner self-direction and centered on the learner's preference for assuming responsibility for their learning (Brockett & Hiemstra, 1991). Influenced by the work of Oddi (1987) Brockett and Hiemstra developed a two dimension framework corresponding to transactional or instructional methods and learner personality characteristics. This distinction between process and personality was the basis for the Personal Responsibility Orientation (PRO) model they developed (Brockett & Hiemstra, 1991).

In examining the various definitions proposed for self-directed learning, Gerstner (1992) published the results of her study listing 13 different definitions for self-directed learning. Gerstner found reference to self-directed learning as an instructional method, a personal attribute, and as a process. She found that the term itself has been given a number of various labels in the literature: self-planned learning, inquiry method, independent learning, self-education, self-instruction, self-directedness, self-directed in learning, self-teaching, self-study, autonomous learning, individualized instruction, student-centered learning, prescriptive learning, and computer-based training (Gerstner, 1992).

Figure 2.2. Defining Self-Directed Learning

Defining Self-Directed Learning

	SDL = Learner Characteristic	**SDL = Learning Process**	**SDL = Environment**
1926			**Lindeman** – Context of Learning *The Meaning of Adult Learning*
1961		**Houle** - Linear Process *The Inquiring Mind*	**Houle** – SDL is not Isolated •Teachers •Tutors •Mentors •Resource people •Peers
1975	**Knowles** – Initiative	**Knowles** – Linear Process *SDL A guide for Learning & Teachers*	
1978	**Guglielmino** – Description	**Guglielmino** – Goal Oriented	
1979		**Tough** – Linear Process *Learning Projects*	
1981	**Cross** – Characteristics		
1983	**Kasworm** – Finite Behaviors	**Mocker & Spear** – process of control and means	**Mocker & Spear** – learner intersects with environment
	Brockett & Hiemstra – self-efficacy & intrinsic motivation	**Brocket & Hiemstra** – control & initiative	**Brocket & Hiemstra** – social context of learning
1991	**Candy** – self-management; research skills, goal setting abilities & critical thinking		**Candy** – Individual's frame of reference
			Grow – stages of educational settings

Figure 2.2. The development of the self-directed learning concept as either a learner characteristic, a process, or the result of environment developed over time. Brockett and Hiemstra (1991) developed a model of self-directed learning that encompassed the breadth of these concepts.

The haphazard nature of the definitions for self-directed learning has added complexity to the study of self-directed learning. The proliferation of definitions in research brought with them not just adult learning theories and philosophies but also a richer, deeper, human narrative. The choice then of definitions and models in research should be made with purpose (Owen, 2002).

Amidst the myriad definitions present in the dialogue of self-directed learning only one of the aforementioned definitions appears to cross the disparity between learner characteristic, process, or outcome. The definition proposed by Brockett and Hiemstra is the only definition in the dialogue to date that is sufficiently comprehensive so as to represent the depth of the self-directed learning discourse.

Measuring Self-Directed Learning

The predominating theoretical orientation underlying self-directed learning was humanism (Caferrella, 1993). An adult educator working from a humanism perspective believes

31

learners have an innate urge to move toward self-actualization. A humanist believes the role of the environment and therefore of the adult educator is to assist learners in meeting their learning needs. A humanist adult educator is likely most interested in the development of the learner and endeavoring to have the learner assume responsibility for their learning (Owen, 2002).

Working from this perspective and the findings of Tough (1975) and Knowles (1973) that adults are the executive agents in their learning endeavors, Guglielmino (1977) designed a self-report questionnaire to measure those attitudes, skills, and characteristics that together make up each individual's level of readiness to manage their learning. Guglielmino (1977) employed a Likert-type questionnaire to develop a quantitative research tool, the Self-Directed Learning Readiness Scale (SDLRS).

To determine the content of the self–assessment, Guglielmino (1977) convened a panel of experts on self-direction, and the members of the panel were Houle, Tough, and Knowles. Guglielmino (1977) employed a three-round Delphi Survey allowing her to list and rate the self-directed learner characteristics which the experts considered important. These characteristics were then assessed by the panel for desirability, necessity and essential nature. The characteristics with a median rating were then used to develop the questions for the SDLRS (Guglielmino, 1977).

To establish validity and reliability of the SDLRS Guglielmino administered the instrument to 307 subjects in Georgia, Canada, and Virginia and achieved an estimated reliability of .87 (Guglielmino, 1977). Based on the results of the initial test she expanded the SDLRS to 58 questions. A later compilation of 3151 respondents conducted in 1988 resulted in a .94 reliability estimate using the Pearson split-half test of reliability (McCune, Guglielmino & Garcia, 1990). This second more comprehensive assessment of the instrument's validity attempted to put to rest a debate among researchers regarding the validity of the SDLRS (Bonham, 1991; Brockett, 1985). After more than a decade of debate Delahaye and Choy (2000) conducted a review of research employing the SDLS and found extensive support for both the accuracy and usefulness of the instrument as an assessment tool for self-directed learning readiness.

Oddi (1986) formulated what she believed to be the theoretical personality characteristics of self-directed continuing learners and then developed an instrument, the Oddi Continuing Learning Inventory, (OCLI), to identify those learner characteristics. She conducted an

extensive literature review to identify the list of personality characteristics believed to be present in self-directed learners. She then categorized her list into three overlapping domains: those with a proactive versus reactive learning drive; those possessing cognitive openness versus defensiveness; and those with a commitment to learning versus apathy or aversion to learning.

The OCLI contains 24 statements with a seven-point response range and has demonstrated an internal reliability of .87 and a 2-week test-retest correlation of .89. Oddi (1986) conducted a factor analysis which yielded three factors different from her original concept. The different factors were a general learning ability, the ability to be self-regulating, and an eagerness for reading. Further factor analysis indicated the presence of a fourth factor, learning with others. The factor analysis also revealed that general learning ability could be best expressed as learner motivation/self-efficacy/autonomy. While the use of the OCLI became more common, three subsequent studies of the instrument achieved conflicting results (Harvey, Rothman and Frecker, 2006).

Philosophical Foundations of Self-Directed Learning

Personal Responsibility Orientation (PRO) Model

The model Brockett and Hiemstra developed changed the philosophical underpinnings of self-directed learning (Owen, 2002). Penland (1981) had first moved the discussion of self-directed learning theory beyond the then understood limits of behaviorism when he suggested that self-directed learning can be better understood from a neobehaviorist perspective, which he understood to be behaviorism within a broader context. Brockett and Hiemstra explained that "where classical behaviorism is only concerned with the environment as a determinant of behavior, neobehaviorism stresses the interaction of the individual and environment" (Brockett & Hiemstra, 1991, p.128).

Piskurich (1993) added to the dialogue on neobehaviorism. He believed that in self-directed learning there would be times when the environment dictated learning outcomes and times when the learner was in control. He presented an example regarding skills and technical training where initially there had to be more structure and less of a learner centered approach. Once initial learning goals were achieved in terms of predetermined organizational training needs, then the trainee was free to choose to learn more about any topic they desired. In addition to Piskurich (1993), Knowles (1975), Guglielmno (1977), Brookfield (1986), Brockett and

Hiemstra (1991), and Candy (1991) all espoused a neobehaviorist approach when they recognized that self-directed learning occurred when organizations employed human resource development contracts containing choice-centered definitions.

Brockett and Hiemstra's (1991) PRO model, however, combined both behaviorism and humanism. The PRO model provided a comprehensive conceptual framework for understanding self-direction in adult learning. Brockett and Hiemstra believed self-directed learning was comprised of both an instructional method process and personality characteristics of the learner. Of the various models of self-directed learning it was the PRO model that linked the external and internal drivers of self-directed learning and thereby incorporated the humanist perspective that adults will move to self-actualization and the behaviorist position that environment, in this case the adult educator, will shape that outcome (Brockett & Hiemstra, 1991).

In the PRO model the instructional method process included the influences of the environment as understood by behaviorists. Brockett and Hiemstra (1991) called this process self-direction in learning. The personality characteristics of the learner, which they called, learner self-direction acknowledged the human motivation to reach self-realization as ascribed by the humanist theory. Three self-directed learning practices recommended by Brockett and Hiemstra (1991) appeared to be rooted in behaviorism. They were: (1) learning contracts; (2) skill-based instruction techniques; and (3) self-modification. In each of these practices the adult educator shaped the outcome of self-directed learning. In each of these practices the environment acted to shape the learner's outcome (Brockett & Hiemstra, 1991).

The PRO model recognized that learners have control over how they respond to situations. Brockett and Hiemstra (1991) believed it was the learner's willingness to take control of their learning that determined the learner's potential for self-directed learning. Thus they concluded that self-direction had both an external and internal component. The PRO model encompasses both of these elements and is represented by a unidirectional cyclical and simultaneous flow of learning within the learning environment.

At the top of the circle, and beginning the process, is personal responsibility. From personal responsibility the characteristics of learning lead to learner self-direction and then to self-direction in learning. Conversely, the characteristics of the teaching learning transaction lead from personal responsibility to self-direction in learning and then to self-directed learning. Both of these paths rest within the factors of the social context (Stockdale & Hiemstra, 2003).

The PRO model linked the external teaching and learning of the individual to the personal, internal orientation of the learner. Brockett and Hiemstra believed that the combination of the external and internal factors of self-directed learning empowered the learner and led to the learner accepting responsibility for their learning (Stockdale & Brockett, 2011). Spear and Mocker (1984) wrote, "By personal responsibility we mean that individuals assume ownership for their thoughts and actions" (p. 26). They also linked their concept of personal responsibility to Maslow's (1970) concept of self-actualization declaring the two to be directly proportional and that one should indicate the other (Spear & Mocker, 1984).

Brockett and Hiemstra (1991) further linked their PRO model to Bandura's (1997) concept of self-efficacy proposing that the learner characteristic of self-directed learning was "an individual's beliefs and attitudes that predispose one toward taking primary responsibility for their learning" (Brockett & Hiemstra, 1991, p. 29). This statement has led to research demonstrating a relationship between self-direction and intrinsic motivation (Delahaye & Smith, 1995; Ryan & Deci, 2000). In fact, the PRO model indicates that individuals with a heightened sense of self-efficacy are more likely to positively control their environment and learning outcomes than those with a lesser sense of self-efficacy (Pajares, 1996, 2003).

The Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS)

Stockdale (2003) conducted research which led to her development of the PRO assessment tool. Like the SDLRS, the PRO-SDLS was designed to measure self-directed learning. Like Guglielmino, Stockdale employed a five-point Likert scale believing it best reflected the learner's degree of agreement or disagreement with the statements pertaining to self-perceptions of their actions and beliefs in self-directed learning opportunities. Stockdale employed 35 psychometrically sound items to create the PRO-SLDS (Stockdale & Brockett, 2011).

In selecting the psychometrics, Stockdale and Brockett chose to use those psychometrics associated with learners in higher education rather than the general population of adult learners. To prove validity, students were also asked to provide responses to the SDLRS. Stockdale and Brockett also asked the professors of the students to rate their students' levels of self-directedness. The professor evaluations of the students were then used to prove convergent

validity. One hundred ninety students completed the PRO-SDLS with a resulting Cronbach's alpha coefficient of .92, which exceeded the established standard for reliability (Stockdale & Brockett, 2011).

Forty years of self-directed research indicated that understanding of self-directed learning had come full circle (Owen, 2002). Beginning with Knowles (1975who believed self-directed learning started outside the classroom, a number of measuring devices were developed to assess self-directed learning in higher education. The proliferation of theories and testing led to an understanding that self-directed learning was a dynamic combination of attitudes and skills, essential for dealing with the complexity the individual faced in all aspects of their lives (Guglielmino & Long, 2011). Moving beyond the classrooms of higher education, self-directed learning has demonstrated value in professional organizations, and businesses whose goals and mission statements now reflect self-directed learning. The proliferation of information and technological devices available to the individual has revealed the value of self-directed learning in the personal lives of individuals. Questions regarding parenting techniques, individual health care management, and the selection of service providers are all now possible at the individual level accessed on personal computers plugged into the world-wide web. The pursuit of personal interests and leisure activities or the deeper seeking of meaning in one's life can now be managed and learned by each individual (Guglielmino & Long, 2011).

Research in the past decade (Kruse, 2007; Radtke, 2008; Roderick, 2004) has validated Oddi's declaration that self-directed learning was one of the most common ways to learn and that self-directed learning was instrumental to lifelong learning. "[The] ability to be a self-directed learner is a requirement for all adults in a rapidly-changing, technologically-complex society (Oddi, 1986, p. 21). Field (2000) concluded that in the current globalized environment, the pace of technological development and the overall constant change in our everyday lives, continuous lifelong education is now a necessary component of career, civic, and private life (Field, 2000).

Subsequently to Field's 2000 comment Roderick (2004) conducted a study of first year students at a Canadian University and found that by developing self-directed learning skills they were better able to cope with change and the professional demands associated with lifelong learning. Kruse (2007) conducted a study of Canadian and American music students and found that the teaching strategies associated with self-directed learning fostered the development of lifelong learning strategies between schools and communities. Radtke (2008) examined the

transfer of learning by certified athletic trainers during their education and in their respective work settings and found that self-directed learning strategies were used to facilitate knowledge transfer both during education and in the workplace.

Guglielmino and Long (2011) pointed out, however, that while some individuals will overcome obstacles to their self-development, others will require assistance in developing the skills and attitudes necessary in today's construct of lifelong learning. Guglielmino and Long point out that adult educators retain a responsibility to discover the process and means to facilitate self-direction in learners. In reaching this conclusion, Gulielmino and Long demonstrated the continued relevance of Knowles', 1975 book, *Self-Directed Learning: A Guide for Learners and Teacher.* In the field of adult education nothing previously discovered should be ignored, but rather consideration should be given to giving renewed attention in light of the changing contemporary environment (Guglielmino & Long, 2011).

Current Research utilizing the PRO-SDLS

With one exception the following studies have utilized the PRO-SDLS since its development in 2003. Not mentioned are three qualitative studies that employed only the PRO model.

Fogerson (2006) utilized the PRO-SDLS to determine if there were correlations among learner readiness factors and satisfaction in online learning. The PRO-SDLS was selected because it assessed self-direction as a personal responsibility. The researcher believed that the personal responsibility aspect of self-directed learning best aligned with self-direction in online learning. The study involved students at the University of Tennessee taking online courses between Summer 2002 and Spring 2004 terms. The study was limited to graduate and undergraduate students taking courses completely online with no face-to-face components. Of the 931 students 314 responded; however 97 fell outside the population. A total of 217 participant responses fit the study parameters. The study found a positive correlation between age and self-direction; however, the study noted that no significant correlation between age and self-direction existed above the median age indicating that most variance occurred within the younger group of participants. The study also confirmed the reliability of the PRO-SLDS. The scale's internal consistency (α=.91) was similar to the level (α=.92) reported by Stockdale (Forgerson, 2006).

Gaspar, Langevin, Boyer, and Armitage (2009) utilized the PRO-SDLS to measure the impact of a peer-to-peer forum in the teaching of computer programming in online courses as it related to the development of self-directed learning. The study was conducted at the University of South Florida in 2008. While the study employed the PRO-SDLS in a one group, pretest posttest design, the PRO-SDLS was not the only instrument used to assess the impact of the peer-to-peer forum. The researchers distinguished between an individual's perception of their ability to direct their own studies and the observable processes employed by the individual used to direct their own studies. Overall the study found that peer interaction caused the learning to move from a valuation of their skills as a self-directed learner to a valuation of the processes they employed to direct their learning. The latter is similar to Brockett and Hiemstra's distinction between self-directed learning and self-direction in learning (Gaspar, Langevin, Boyer, & Armitage, 2009).

Halicioglu (2010) studied the impact of an online community oriented police training program conducted by the Turkish National Police to examine the relationship between the self-directed learning and the assessed outcomes of the training program. The research conducted through Michigan State University used the PRO model developed by Brockett and Heimstra (1991) but did not use the PRO-SLDS. The study utilized the Oddi Continuing Learning Inventory (Halicioglu, 2010). There is no mention of the PRO-SLDS even through the instrument had been in use since 2003.

Hall (2011) utilized the PRO-SDLS to assess institutional efforts to foster the development of personal responsibility for learning among first generation college students enrolled in the Freshman Summer Institute, a summer program at the University of South Florida designed to augment academic success and retention among first-generation college students. The PRO-SDLS was selected as the instrument because it assessed both the learner self-direction component as well as the teaching-learning transaction. The summer programs' objective was that the student assumed primary responsibility for planning, implementing, and evaluating the learning experience with the teacher facilitating. A purposive sample was used for the study. Of the 224 students participating in the summer bridge program 110 filled out both the pretest and posttest PRO-SDLS. While the mean score rose from 89.62% to 91.17% the data indicated that this was not significant at the .05 test of significance. The researcher also found no significant interaction between gender and race/ethnicity scores in relation to the posttest score, neither was

there any significant difference when gender and race/ethnicity were the main effect (Hall, 2011).

Tiffani (2012) utilized the PRO-SDLS to test the relationship between self-directed learning and information literacy. He chose the PRO Model because it focused on the learner and their interaction with a process, in this case the process of self-directed learning. One hundred thirty-eight students attending on campus classes pursuing a bachelor's degree in business, or a master's degree or and educational doctoral program participated in the study conducted at a private university in the Appalachian region of the United States. While the researcher found literature claiming that teaching information literacy increases self-directed learning, the study found no significant relationship existed. Tiffani (2012) also found no statistical significance in PRO-SDLS scores and level of education.

Gammill (2013) utilized the PRO-SDLS to evaluate teachers who participated in school district mandated professional development and a professional learning community against those teachers who only participated in school district mandated professional development. The difference was sought in terms of increased self-directed learning as assessed by the PRO-SDLS. In this study the PRO-SDLS was modified at the permission of Dr. Stockdale so that the questions applied to teachers. The study was not a pretest posttest design, but rather sought to find differences in the populations. The study found that those who participated in a professional learning community scored significantly higher in motivation.

Conceptual Framework for the Study

The conceptual framework of this study was the self-directed learning PRO model. Within the field of adult education there is not a consistent or majority theoretical base or framework for self-directed learning (Candy, 1991). While early frameworks studying the phenomena of self-directed learning were linear in nature the field began to understand self-directed learning as a process and eventually the idea that self-directed learning was variable and malleable resulted in the charge that educators had a responsibility to foster self-directed learning (Brockett and Hiemstra, 1991).

The PRO model incorporated the concepts of learner characteristic and learning process and viewed them as occurring on a continuum. It accepted that knowledge, skills, and learning attributes and experiences are transferable to other situations and that learning does not occur in

isolation (Hiemstra, 1994). The PRO Model accounted for the autonomy of the learner and accepted the unbounded potential of the adult learner. These concepts were necessary components of a desire to foster a culture of lifelong learning (Candy, 1991). This model does not suggest, however, that the learner always has control, but espouses control of the learner in their response to the learning process (Heimstra, 1994).

The PRO model has numerous implications for the Army learner and learning environment. First by empirically exploring the PRO model within the Army's professional military education system, further information will be contributed as to its possibilities as a conceptual framework in which to understand and assess the development of lifelong learning. Second, there have only been two studies to quantitatively validate the PRO-Model (Fogerson, 2006; Stockdale, 2003) through the use of the PRO-SDLS. While several studies have used the PRO-model as a conceptual framework, none have examined the single largest educator of adults, the U.S. Army.

Figure 2.3. Conceptual Framework
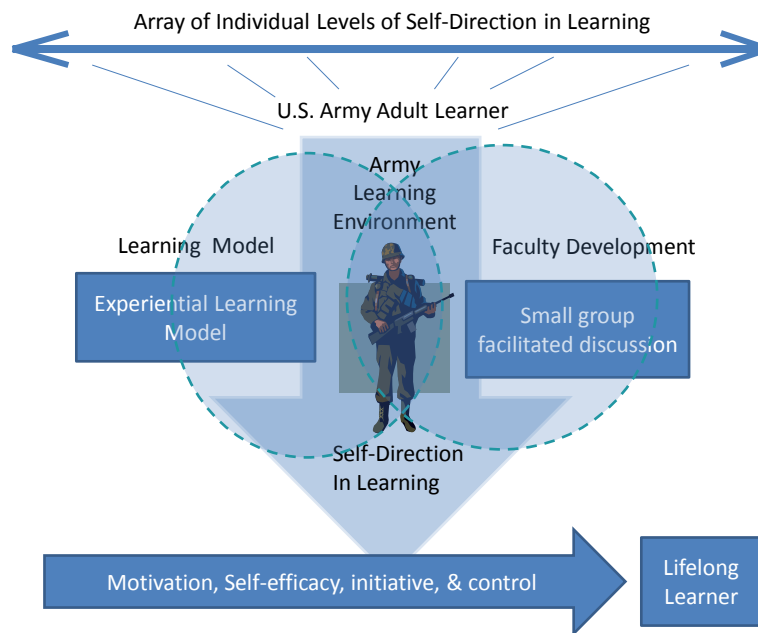
Figure 3.3. A modified PRO-model with the soldier at the center. In the Army's CGSOC the Army's learning model and a faculty development program are part of the learning environment. While the soldier enters the learning environment possessing any of an array of self-directed learning capabilities passage through the CGSOC learning environment is intended

to move them to the right along the scale of self-directed learning competencies, with the ultimate goal of developing a lifelong learner.

The Diversity of the Adult Learner and Self-Directed Learning

Meece, Glienke, and Burg (2006) examined gender differences in motivation using four contemporary theories of achievement motivation and found that "girls' and boys' motivation-related beliefs and behaviors continue to follow gender role stereotypes" (Meece, Glienke, & Burg, 2006, p. 351). Horner (2005) concluded that "most women have a motive to avoid success, that is, a disposition to become anxious about achieving success because they expect negative consequences such as social rejection and/or feelings of being unfeminine" (p. 207). According to expectancy-value theory (Atkinson, 1964) gender differences in motivation were related to avoiding success, fear of failure, and low expectations for success. Eccles (1994) noted, however, that much of this research was judged against a male standard that did not take into account gendered patterns of socialization and education. In general differences in gender, however, were small in magnitude and were not a likely predictor of behavior responses (Eccles, et al., 1983).

Despite the rise in valuing cultural diversity little research has examined if gender differences are motivated by race/ethnicity (Meece & Kurts-Costes, 2001). Collins (1998) and Weiler (1985) found that gender socialization patters differ for Hispanic, Asian, and African American youth. African American and Latina youth cope with stereotypes of intellectual inferiority (Spencer, Swanson, & Cunningham 1992). African American and Latino males appear to devalue academic achievement (Graham & Taylor, 1998).

While research reveals no clear pattern of gender differences in achievement goal orientation, "differences appear to be moderated by ability, race and classroom context" (Meece, Glienke, and Burg, 2006, p. 360). Concluding that no single factor alone accounts for differences in advancement goal orientation (Meece, Glienke, and Burg, 2006).

Jones (1993) studied 273 students and found that level of education was a better predictor of self-directed learning than was age. Fogerson (2006) found age was not a factor. Boden (2005) found a positive relationship between SDLRS scores and level of education. Boden also found women scored higher than men; however there was no difference between racial groups. Boden, did find that acceptance of responsibility for self-directed learning correlated with age

and gender. Older students felt less responsible for their learning and women felt they were responsible for their own learning (Boden, 2005).

This study did not examine the demographic of age because the officers attending the Command and General Staff Officer's Course generally fall within a five year window of each other. This study did however, add the military demographic of branch of Army. While no research has examined branch of Army and self-direction in learning the population of this study offered an opportunity to explore this dynamic.

Self-Directed Learning in the United States Army

The training and education of soldiers by the Army is called Professional Military Education or PME. Army leaders recognized the need for PME in the early 19th century when European armies began a transformation of their educational systems to better develop a fighting force for large-scale, industrialized wars. As part of that transformation European armies established pre-commissioning schools which then served as the model for the establishment of the United States Military Academy in 1802 and the United States Naval Academy in 1845.

U.S. Army Training and Doctrine Command

The Army's Professional Military Education

The Army employs the Officer Education System, (OES), to train officers from their initial entry as either West Point cadets, or Reserve Officer Training Corps cadets, or graduates of a number of Officer Candidate Schools as well as direct commissioning (Careers & Jobs, 2013). OES is a sequence of PME conducted over the career span of an Army Officer (U.S. Department of the Army, 2010). "PME is a progressive education system that prepares leaders for increased responsibilities and successful performance at the next higher level by developing the key knowledge, skills, and attributes they require to operate successfully at that level in any environment (U.S. Department of the Army, 2010, p. 66). PME is linked to officer promotions and career management models within the branches of the Army (U.S. Department of the Army, 2010).

McKinley (2005) conducted a study of the Army's Command and General Staff Officer Course. The study examined the curriculum through the lens of adult educational theory and practice. McKinley found that OES had not fully incorporated the adult educational principles of

critical thinking and in particular self-directed learning into its curriculum. The assessment concluded that the Army had not developed a training strategy to produce self-directed learners. It further concluded that while critical thinking had been incorporated into OES as a course of instruction, the Army's overall goal of lifelong learning could not be achieved as it required soldiers to self-direct their off-duty learning (McKinley, 2005).

The report documents that Army leaders recognized the need for soldiers to be lifelong learners:

> The Army's senior leaders have indicated that the Army must become a "learning organization," following Peter Senge's model in *The Fifth Discipline*. According to Senge, "Organizations learn only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs." Part of the Army's plan to become a learning organization is to transform its education system to focus more on individual learning. (McKinley, 2005, p. 21)

In a report issued by Brigadier General James Hirai, then Deputy Commanding General of the Army Command and General Staff College, he recognized that while the Army espoused a commitment to lifelong learning it had not fully supported it as an equal among the three pillars of the Army's training and education system (Burlas, 2004). A 2010 House of Representatives review of the Army, Air Force and Navy sought to determine the effectiveness of the services PME, which for officers in the Army is OES. The House study found that across the services PME had been significantly modified; however, the study questioned the effectiveness of that change and cited shortfalls in the area of educating service men and women to think critically (U.S. House of Representatives, 2010).

Though the House of Representatives study criticized the services for failing to educate servicemen and women in the art of critical thinking, Army leadership had begun a call for critical thinkers as early as 2004 (Fastabend & Simpson, 2004). Even earlier in December 2000, the Army Research Institute hosted a workshop titled Training Critical Thinking Skills for Battle Command. The workshop challenged participants to define a process for inculcating critical thinking into the Army's system of schools, but cautioned that an already burgeoning school system could not be overtaxed (Riedel, Morath & McGonigle, 2001). The final report of this December 2000 conference resulted in the Army including critical thinking courseware in its OES as credited in the 2005 McKinley study (Fastabend & Simpson, 2004).

McKinley (2005) contended that the Army had not developed a training strategy to produce self-directed learners; however, the study examined only the curriculum and did not assess student outcomes. Burlas (2004) found that the Army had long espoused lifelong learning, even prior to its current learning concept; however, his findings were that the Army had not fully resourced lifelong learning. As with McKinley, the report did not assess student outcomes but conducted its assessment from a resource and policy perspective (Burlas, 2004).

This research was intended to assess if attendance at Army resident officer training correlated to a change in the level of student self-directed learning. While it only examined one element of officer professional military education, the study was the first to assess the development of self-directed learning within the Army.

The U.S. Army Command and General Staff College

An adult learner who is fully self-directed has moved
beyond simple task control and has learned to think critically and
construct meaning in ill-defined and complex content areas.

Garrison

The Command and General Staff College (CGSC) has been operating as a military college since 1881. Its primary responsibility remains the training of field grade officers at the rank of Major, the fourth rank attained by Army officers (Davis & Martin, 2012). CGSC has four schools; the largest is the Command and General Staff School, GCSS. CGSS is responsible for the Command and General Staff Officer Course, CGSOC. GCSOC includes the Common Core and the Advanced Operations and Warfighting Course, AOWC. AOWC includes elective offerings (Dean of Academics and Command and General Staff School, 2008). The Common Core curriculum is offered at the main campus and four satellite campuses within the continental United States. CGSS provides non-resident CGSOC in two venues. The Total Army School System (TASS), is a US Army Reserve school system conducting the course at Army installations throughout the world. These courses include face-to-face instruction conducted one night per week or one weekend per month until complete. There are also two week resident phases that complete the course. Additionally the course is offered through the Department of Distance Education (DDE). This course provides instructors in an asynchronous online environment (Dean of Academics and Command and General Staff School, 2008).

CGSC's vision statement called for the college to strive to be an educational center of excellence. The college's strategic priorities included recruiting, developing, and retaining world-class faculty. The college directed its resources along five lines of effort: (1) Students, (2) Faculty, (3) Curriculum, (4) Leader Development and Education, and (5) Infrastructure. The college's stated goal was and remains a faculty supported by a faculty development program and curriculum supported by adaptive, web-based curriculum along a multi-disciplinary approach (Command and General Staff College, 2013). The college's philosophy called for creating a culture of agile and adaptive leaders and lifelong learners. The first of five principles espoused by CGSC committed the organization to be a learning organization: It read:

> *A Learning Organization Committed to Currency and Relevancy and the Contribution to Knowledge:* Our current reality is a transforming Army at war that demands that our graduates be prepared to assume war fighting duties immediately upon graduation. Our graduates must be confident, competent leaders, and creative problem solvers who understand the complexities of the contemporary operating environment. Learning is our most important contribution to the nation; therefore, our challenge is the mastery of a diverse, broad, and ever-changing professional body of knowledge. Collaboration (developing, publishing, and subscribing) in the professional body of knowledge is essential to maintain currency and make relevant contributions to furthering professional understanding or creating new professional knowledge. This demands that CGSOC be a learning organization committed to a continuous effort to improve student learning, teaching, and the learning environment. We must be an analytic, thinking, and learning institution, seeking new knowledge, but circumspect enough to discern the difference between contemporary innovation and enduring principles. (Command and General Staff College, 2013)

CGSOC employed the Army Learning Model. This model creates a career-long learning continuum designed to prepare officers with the knowledge and habits of mind to meet the challenges of the complex operating environment. CGSOC no longer employs "school solutions" but rather challenges students to understand that there are many solutions to each problem. Instruction includes critical-thinking and decision making (Davis & Martin, 2012). To implement the model "CGSC used direct measures of learning such as papers or examinations to measure demonstrated learning in the classrooms, and it used indirect measures such as graduate

surveys or supervisory surveys to demonstrate transference of learning to the field environment"
(Davis & Martin, 2012, p. 73).

GCGSOC is required for promotion to Lieutenant Colonel (Weston, 2010). In order to
attend the resident course officers are selected annually by a board convened of senior officers
(Davis & Martin, 2012). Students from both active and reserve components of the Army, unable
to attend the resident course because of time, location, non-selection, or other circumstances
attend the either the TASS or DDE non-resident course in order to be competitive for promotion
(Weston, 2010). The resident course is conducted twice a year and runs for ten months. The
resident course has students from the Air Force, Navy and the Marine Corps as well as
Department of the Army Civilians and civilians from other government agencies, such as
Department of State and Department of Transportation (Persyn, 2008; Davis & Martin, 2012).

Curriculum Development at CGSC

Another one of the five principles espoused by CGSC involves curriculum and
instructional strategies. It read:

> *Socratic and Adult Learning Methods:* The institution employs the most appropriate
> techniques and methods in an academic setting conducive to the most advanced
> understanding of the demands that will be made of those who pass through its courses of
> instruction. This includes methodologies that are learning-centered, experiential, and
> effective. We enhance the competence of our students through a learning-centered
> educational methodology. This methodology relies on collaborative learning, reflective
> practice, critical reasoning, creative thinking, and the practical application of adult
> learning theory. The CGSC classroom is an active learner environment. Our faculty
> members are subject matter experts and facilitators in a collaborative learning
> environment where student and faculty experience stimulates thought, discussion, and
> knowledge construction. Socratic method and discussion teaching where "all teach and
> learn" challenge critical reasoning and creative thinking skills. This methodology is
> expressed through our curriculum—one that is adaptive, responsive, integrative,
> experiential, and transformational. (Command and General Staff College, 2013)

CGSC employed the Experiential Learning Model, ELM, comprised of five elements:
Concrete Experience, Publish and Process, Generate new Information, Develop, and Apply.

Employing the ELM allows faculty to have students primarily responsible for their own learning. Students are taught in small groups consisting of sixteen students (Dean of Academics and Command and General Staff School, 2008).

CGSS uses Accountable Instructional System (AIS), to develop and administer courseware. AIS required a Post-Instructional Conference (PIC), at the completion of each block of instruction, Common Core or AOWC. During the PIC, instructors and lesson authors discuss the strengths and limitations of the block of instruction and recommend changes to the curriculum. The PIC is followed by a Course Design Review, CDR, during which lesson and block authors discuss the changes made to the curriculum (Dean of Academics and Command and General Staff School, 2008). Both the resident and non-resident courses use the same curriculum and reside under CGSS ensuring changes made during a review cycle are applied to both program delivery methods (Davis & Martin, 2012).

Faculty Development at CGSC

Another of the five principles espoused by CGSC regards their faculty. It read:

Empowered Professional Faculty: USACGSC best accomplishes its educational goals by a vital professional faculty drawn from the entire range of relevant academic and military disciplines. The faculty embodies the scholarship of teaching, learning, and warfighting. Our faculty must master both content and process. Our faculty are decisive because they are expert in their field of study, talented facilitators of learning, and empowered with the flexibility to determine how best to achieve program learning objectives in their classrooms. (Command and General Staff College, 2013)

Faculty Development was the responsibility of the Faculty and Staff Development (FSD), in the Office of the Dean of Academics. Faculty development was conducted in four phases. In Faculty Development Phase 1 (FDP1), faculty were taught the Adult Learning Theory, the Experiential Learning Model, and the Learning Styles Inventories. FDP1 was designed to provide faculty with an opportunity to "experience and practice discovering and assessing more effective means to enhance learning." Faculty Development Phase 2 (FDP2), was course specific and could be taken on a recurring basis in support of making curriculum improvements (Dean of Academics and Command and General Staff School, 2008).

Faculty Development Phase 3 (FDP3), taught the faculty how to write courseware using AIS. AIS uses a five phase process: analysis, design, development, implementation, and evaluation. Faculty are to be FDP1 complete prior to attending FDP3. "Lesson and course authors used the knowledge gained in FDP1 to develop courses and lessons to achieve optimum student learning in an adult learning environment" (Dean of Academics and Command and General Staff School, 2008, p. 6-2). Faculty Development Phase 4 (FDP4), was continuing education and is intended to allow instructors to maintain currency in education philosophy and emerging training technology (Dean of Academics and Command and General Staff School, 2008).

The U.S. Army Command and General Staff College has been educating officers for over 120 years. Within the past decade, it implemented a significant change in how it educates. The two primary changes were the incorporation of the experiential learning model and development of robust and continuous faculty and curriculum development processes.

Summary

In support of this study of self-directed learning among adults, this literature review established a link between the competencies of lifelong learning and self-directed learning. It examined the development of the concept of self-directed learning within the field of Adult Education and then examined the philosophical foundations of self-directed learning ending with the development of the PRO model by Brockett and Hiemstra (1991). The primary instruments available to measure self-directed learning were examined and included a focused look at the theoretical underpinnings of Stockdale's development of the PRO-SDLS. This review then described the Army's Professional Military Education focusing on the Officer Education System and concluded with a description of the U.S. Army Command and General Staff College with emphasis on its curriculum and faculty development both of which have been adapted with the intended outcome of developing critical thinking, self-directed, lifelong learners. Chapter 3 uses the research presented in this chapter as the basis for the research methodology.

Chapter 3 - Methodology

A review of the literature indicated an association of lifelong learning with self-directed learning within the field of adult education. This association is also made in research assessing the development of lifelong learning. Hall (2011) employed a research methodology similar to this exploratory study; however, Hall (2011) found no significant difference over the period of study and surmised that the three month duration of the course may have been too short to adequately assess whether or not self-directed learning had been fostered over the period of study. Noticeably absent in the research, however, is an assessment of a formal, resident educational experience over the course of an academic year. The purpose of this exploratory study, therefore, was to examine the fostering of self-directed learning over an academic year. Given the changes made at the Army's Command and General Staff College in curriculum and faculty development this study sought to examine both the "instructional method processes (self-directed learning) and personality characteristics of the individual learner (learner self-direction)" (Brockett & Hiemstra, 1991, p.26). Examination of these two factors was intended to afford a richer understanding of the development of self-directed learning within the Army officer corps, specifically the changes in self-directed learning occurring over the course of CGSOC.

Rationale for Methodology

This study analyzed the level of change in self-directed learning of officers attending the Army's Command and General Staff Officers Course by applying a quasi-experimental, pretest posttest, comparative approach study design. In addition to answering the question of if a change occurred, this study also sought to examine change based on the attribute independent variables gender, race/ethnicity, level of education, and branch of the Army. A review of the literature found that adult education literature is not consistent in self-directed learning outcomes in terms of gender, race/ethnicity, and level of education. These variables were included to provide an additional data point to the dialogue regarding the fostering of self-directed learning among the broader community of adult educators. The independent variable, branch of Army, was added out of deference to the research hosting organization and the link of this research to the Army's desire to create a culture of lifelong learning across all of its military occupations.

This study examined the development of self-directed learning using the Personal Responsibility Orientation (PRO) model. The PRO model, of all the concepts of self-directed learning was the only one that took into account self-directed learning as the teaching learning transaction and as a learner characteristics and accepted that both are effected by the learning environment (Brockett & Hiemstra, 1991). In so doing, the PRO model did not discard the learner attributes commonly associated with self-directed learning for study of the process of self-directed learning but rather merged into a single model both commonly held concepts (Stockdale, 2003; Fogerson, 2006).

The Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) was selected as the instrument for this study because it was designed to assess all aspects of the PRO model. Additionally, the four subcomponent categories assessed by the PRO-SDLS provide for a deeper understanding of any changes that occurred over the course of CGSOC. The additional scores also provided greater clarity and context as this study also sought a richer understanding of the impact of fostering self-directed learning on gender, race/ethnicity, level of education, and branch of the Army.

In order to evaluate the fostering of self-directed learning by gender, race/ethnicity, level of education, and branch of Army, demographic questions were add to the pretest administration of the PRO-SDLS (Appendix B). Four additional Likert scale questions were added to the posttest administration of the PRO-SDLS, one Likert scale question per PRO-SDLS subcategory: learner initiative, learner control, learner self-efficacy, and learner motivation. Based on the respondent's answer to each of these four questions they were given an opportunity to provide a narrative response (Appendix C).

Research Questions

The following questions guided this study:

1. Does the level of self-directed learning change from pretest to posttest among the Army student population of the Army's Command and General Staff Officer's Course? If so, how, and to what extent.

2. Does a change in the level of self-directed learning correlate to the learner characteristic of gender (male, female)? If so, how, and to what extent.

3. Does a change in the level of self-directed learning correlate to the learner characteristic of race/ethnicity (White, Non-White)? If so, how, and to what extent.

4. Does a change in the level of self-directed learning correlate to the learner characteristic of level of education (bachelor's degree, master's degree)? If so, how, and to what extent.

5. Does a change in the level of self-directed learning correlate to the learner characteristic of branch of Army (operations, operations support, force sustainment, special staff)? If so, how, and to what extent.

Variables

The dependent variables in this study were the four socially contextualized attributes of self-directed learning: learner initiative, learner self-efficacy, learner control, and learner motivation as assessed by the PRO-SDLS. The independent variables were gender, race/ethnicity, level of education, and branch of Army.

Population Studied

The population for this study was the Army officers selected to attend the Command and General Staff Officer Course in residence. These officers were the first to have been selected for attendance at the resident course since 2004 (Bresser, 2007). For the previous decade attendance at CGSOC was 100 percent of active Army majors at a resident course. During this previous period attendance at the Fort Leavenworth resident course was a matter of branch of the Army, soldier availability, and desire. Selection to attend the resident 2015 course was the first since 2004 to be the result of a personnel file review. Personnel files contained performance evaluations, awards, and decorations. The files also contained a picture of the soldier, transcripts of any previous education as well as previous training evaluations. If the soldier had received any form of military punishment a record of that punishment was also included in the file (U.S. Army Human Resources Command, 2014). This population of Army officers was first selected for promotion to major then selected for attendance at the resident course. Of the 2066 captains selected for promotion to the rank of Major, 1019 were selected to attend the resident CGSOC (U.S. Army Human Resources Command, 2013; 2014). Of those 1019, 836 attended CGSOC for the 2015 academic year.

Students attend tuition free and receive full pay and allowances with benefits while attending the 10 month course (Dean of Academics and Command and General Staff School, 2005). Given the intent of this study to examine the development of self-directed learning in support of the Army's goal to build a culture of lifelong learning, only the 836 Army officers were selected for this study.

Sample Criteria

Since the purpose of this research was to assess if there is a difference in self-directed learning among Army officers attending CGSOC all U.S. Army officers attending CGSOC were surveyed. Of these Army officers only those who took the pretest in August 2014 were asked to take the posttest in April 2015. The Quality Assurance Office of the Command and General Staff School, CGSS, allowed all Army officers attending the course to be surveyed.

Data Collection Process

The CGSS Quality Assurance Office provided access and use of their contracted online survey package, Inquisite. This online survey package allowed the researcher to build and administer the survey to a large population rapidly and securely. The Inquisite Survey Builder was licensed by the college and available to researchers at the college. Inquisite software was supported through Allegiance. The Allegiance Engage platform is a system for collecting feedback for analysis. This platform secured all data and met the human subjects' protections and the Army regulatory requirements for collecting data from active duty members.

The software allowed the researcher to upload an email roster which it then converted to a code. The code allowed the researcher to determine which participants had not yet answered the survey so that a reminder could be sent to non-respondents requesting they complete the survey. In order to achieve the highest possible response rate the Quality Assurance Office allowed up to two follow-up e-mails requesting the survey be completed and submitted.

The study began with the pretest administration of the PRO-SDLS to all 836 Army Officers attending CGSOC. The pretest administration of the PRO-SDLS included the following additional demographic questions (Appendix B):

Gender:
{Choose one}
( ) Male
( ) Female

Race/ethnicity
( ) White non-Hispanic
( ) Black non-Hispanic
( ) Asian non-Hispanic
( ) Other non-Hispanic (includes American Indians, Pacific Islanders, Alaska natives, and "more than one race/ethnicity"
( ) Hispanic
Level of Education
( ) Bachelor's of Art or Science
( ) Masters Degree
( ) Doctoral Degree.
Branch of the Army
{Enter text answer}
[ ]

The pretest survey was sent out the first week of the course. A reminder to complete the survey went out a week later. One week later a third and final reminder was sent to request the Army officers complete the survey if they had not already done so. A week after the third request to complete the survey went out the survey was closed. Of the 836 who received the invitation to take the pretest PRO-SDLS, 178 submitted their surveys. Of those 178, 158 (19 percent) answered all 25 questions. Incomplete surveys were not evaluated.

Near the end of the ten month course, those who completed the pretest (n = 158) were sent an e-mail to complete the posttest survey. The first reminder was sent April 15th, during the eighth month of the ten month course. The posttest survey invitation went out and the first reminder e-mail had been sent when the QAO notified the researcher that the survey instrument would be suspended the following week. This shortened the posttest period by two weeks resulting in an unexpected mortality limitation.

By way of providing a richer understanding of the impact of attending CGSOC on the respondents' self-directed learning, in addition to answering the 25 PRO-SDLS questions on the posttest administration, respondents were asked to indicate their level of agreement or disagreement to a series of statements regarding changes in their self-directed learning. Respondents answered using the same five-point Likert scale used in the PRO-SDLS. They were asked to indicate agreement or disagreement with the following four statements: (1) My learner initiative changed as a result of attending CGSC, (2) my learner control changed as a result of attending CGSC, (3) my learner self-efficacy changed as a result of attending CGSC, and (4) my learner motivation changed as a result of attending CGSC.

Based on their response to the above statement respondents were then asked to answer one of two narrative response questions. If the response was Strongly Agree or Agree then the following request appears, "Please describe the change in your initiative to learn and to what do you attribute that change." If the response was Neither Agree nor Disagree, Disagree, or Strongly Disagree then then the following request appears, "Please describe why your initiative to learn did not change." This two question option appeared for each of the subcomponents of the PRO-SDLS (Appendix C).

Once data were collected reports were downloaded using Microsoft Word and Excel. The email addresses or names of respondents did not appear in any downloaded reports. Only a code appeared per survey response, leaving no way to identify the individual who provided a particular response. This process provided the highest level of confidentiality to respondents.

Instrument

The PRO-SDLS is a 25-question, self-rating scale. The scale employs a 5-point Likert scale and is designed for college students (Stockdale & Brockett, 2011). Stockdale (2003) chose a Likert scale believing it best reflected a student's degree of agreement or disagreement with statements pertaining to self-perceptions of their actions and beliefs in self-directed learning opportunities" (Stockdale, 2003, p. 76). In this exploratory study, pretest and posttest use of this instrument was used to measure change in self-directed learning over the course of the Army's Command and General Staff Officer Course, a 10-month, formal education, resident course conducted at the graduate level.

A review of the literature demonstrates a linkage between the competencies measured by the PRO-SDLS and those required by lifelong learners (Kegan, 1982; Mezirow, 1991; Mocker & Spear, 1982; Rovai, Ponton, Wighting, & Baker, 2007; Wlodkowski, 2008). A review of the literature also demonstrated the broad use of the PRO-SDLS (Fogerson, 2006; Gaspar, Langevin, Boyer, and Armitage, 2009; Halicioglu, 2010; Hall, 2011; Stockdale & Brockett, 2011; Tiffani, 2012) and laid the basis for using this established instrument to assess the Army's ability to foster self-directed learning at CGSOC.

Instrument Reliability

The PRO-SDLS is an established instrument with previously proven reliability. During the development of the PRO-SDLS Stockdale (2003) used Cronbach's alpha to assess the internal reliability of the PRO-SDLS over three test iterations. Corrected item-total correlations were also calculated. Items resulting in a corrected item-total correlation greater than .30 were retained. The resulting coefficient alpha was .92 (Stockdale, 2003). "The high level of coefficient alpha indicated that self-direction as measured by the PRO-SDLS can be regarded as a unitary construct" (Stockdale, 2003, p. 114).

Instrument Validity

The PRO-SDLS has an established validity record as well. Content validity for the instrument was established by a panel of experts (Stockdale, 2003). The experts included the authors of the PRO model, Brockett and Hiemstra, plus four other experts they recommended. These experts were sent the items from the final study and rated them on a 5-point scale. Five experts responded (Stockdale, 2003). These experts agreed on the appropriateness of 31 of the original 35 items as they related to the teaching-learning component and the Learner Characteristic component (Stockdale & Brockett, 2011, Fogerson, 2006).

Stockdale (2003) assessed congruent validity by analyzing the relationship of the scores between the PRO-SDLS and the Self-Directed Learning Readiness Scale (SDLRS). Pearson product moment correlation coefficient (r) was used to determine the relationship between test scores. "The obtained r-value from the 184 participants who completed both instruments was .76 ($p<.001$) indicating a shared variance (r-squared) of 58%" (Stockdale, 2003, p. 122).

Stockdale (2003) also assessed construct validity by comparing the scores achieved on the PRO-SDLS with "logically related behavioral criteria including optional web-site use of supplementary materials, age, gender, GPA, course performance, and educational attainment" (Stockdale, 2003, p. 85). Significant relationships were found between scores and age, GPA, class performance and completed semester hours (Stockdale, 2003).

Stockdale (2003) further assessed convergent validity by comparing the scores achieved on the PRO-SDLS and the participants' professor's ratings of the participants' self-directedness. Nineteen students participated in this test; however, "no significant relationships were noted between professor ratings and self-reports of self-direction based on PRO-SDLS or SDLRS scores" (Stockdale, 2003, p. 126).

Stockdale (2003) assessed incremental validity to demonstrate that PRO-SDLS scores added "significant unique variance to the prediction of self-direction above and beyond scores from the SDLRS" (Stockdale, 2003, p. 86). PRO-SDLS scores improved the prediction of GPA, age, and course performance above those of the SDLRS; however, when SDLRS scores were compared against the predictions of GPA, age and course performance as assessed by the PRO-SDLS, the SDLS did not account for any unique variance (Stockdale, 2003).

Analysis of Data

Social Science Statistics, an online resource, was used to analyze the quantitative data. Because there were multiple independent variables and multiple dependent variables with assumed normal distribution the means of dependent variables was analyzed using the Student T-test for within category testing and the T-test for Dependent Means for between categories testing. The research questions for this exploratory study were ones of complex differences; therefore two assumptions were made about the data. First, the data were normally distributed. Second, there was homogeneity of variance (Gliner, Morgan, & Leech, 2009).

Tests of Skewness and Kurtosis were applied to the data to verify normality of data; however, because these assumptions were critical to the type of analysis performed on the data, and given the small sample sizes of female, non-white, operations support, force sustainment, and special staff, the non-parametric test Wilcoxon-Signed Rank was used for within category tests and the Mann-Whitney U-test was used for between categories testing.

Question 1: A T-test for dependent means and the Wilcoxon Signed-Rank tests was conducted to analyze differences measured in the pre and posttest administration of the PRO-SDLS.

Question 2: A Pearson Product Moment Correlation, T-test for dependent means, and Wilcoxon Signed-Rank test was conducted to analyze the pretest to posttest PRO-SDLS scores for males; however the female sample was too small to test. A Student T-test was conducted to analyze the relationship between genders.

Question 3: A Pearson Product Moment Correlation, T-test for dependent means, and Wilcoxon Signed-Rank test was conducted to analyze the pretest to posttest PRO-SDLS scores for whites; however, the non-white sample was too small to test. A Student T-test was conducted to analyze the relationship between ethnicities.

Question 4: A Pearson Product Moment Correlation, T-test for dependent means, and Wilcoxon Signed-Rank test was conducted to analyze the pretest to posttest PRO-SDLS scores by level of education and a Student T-test and Mann-Whitney U-test was conducted to analyze the relationship between levels of education.

Question 5: A Pearson Product Moment Correlation, T-test for dependent means, and Wilcoxon Signed-Rank test was conducted to analyze the pretest to posttest PRO-SDLS scores by branch of Army for operations and forces sustainment branches; however the operations support and special staff samples were too small to test. A Student T-test was conducted to analyze the relationship between operations and force sustainment branches of Army.

The study proposal assumed a normal distribution based on an anticipated return rate of 20 percent (n = 163). The pretest results were close to meeting the 20 percent threshold (n=158) at 19 percent. Additionally, the pretest results were sufficient in number in terms of male to female respondents, white to non-white respondents, levels of education, and branches of the Army to allow for a range of parametric statically analysis; however, the low posttest results (n = 40) increased the risk of assuming a normal distribution of data and rendered the female, non-white, operations support, and special staff branches of the Army samples insufficient to conduct comparison analysis. Given the small response rate across independent variables the data was analyzed using both parametric and non-parametric measures.

For this study .05 was used to determine significance. The choice of significance level is arbitrary, but is consistent with previous research conventions (Stigler, 2008; Fisher, 1925).

PRO-SDLS Pilot

In order to assure the suitability of the research method and the PRO-SDLS on an Army officer student population a pilot study was initiated. As the instrument was developed to assess students in higher learning the expectation was that it was well suited for the Army's officer corps as all officers possess at least a bachelor's degree. Results from the pilot submissions indicated both the research methodology and the PRO-SDLS were suited to the study and sample population. Other study populations would be needed in order to assess the suitability of the instrument across the broader population of Army adult learners, especially those adult learners without a bachelor's degree.

PRO-SDLS Pilot Population

The February 2014 to December 2014 class contained 241 U.S. Army officers. All 241 U.S. army officers attending the resident February to December class were the purposive sample for the pilot study. Of the active component students, 44 were female and 177 were male. Of the reserve component students, 5 were female and 15 were male. Of the Army students 82 possessed a master's degree. Forty-nine arrived already enrolled in a master's degree program. Nine students had a professional degree. One student had a doctorate of philosophy and four students arrived already pursuing a doctoral degree (U.S. Army Command and General Staff College, 2013).

Pilot Sample Criteria

Of the students in the February to December class, only U.S. Army students were selected to participate in the pilot program. The use of Army only students was due to the intent of this pilot to assess the suitability of the research method and instrument to determine if there was a difference in self-directed learning among Army officers over the course of CGSOC. Of the 244 Army officers attending CGSOC 34, (14 percent), completed the pilot pretest. Only the 34 Army officers who took the pretest in March of 2014 were asked to take the posttest in Nov 2014. Of those 34, 11, (32 percent), completed the posttest.

Of the 11 respondents 10 were male and one was female. Of the 11 respondents 10 were white and one was non-white; however, the non-white was male. Six had a bachelor's degree. Four had a master's degree. One provided no response for level of education. Four were from the operations branch of the Army. Two were from operations support. Three were from special staff and none of the respondents were from force sustainment. Two provided no response for branch of Army.

The low response rate for the pretest and the posttest caused the researcher to have a discussion with the Quality Assurance Officer to discuss possible causes. CGSC had a policy prohibiting incentivizing participation. They also wouldn't allow the researcher to present the survey to the students. Regarding the posttest period, the Quality Assurance Office recommended moving the posttest forward. The rational was that by the last month of the course the students have begun to focus effort on their next assignment.

The descriptive data for the pilot follow.

Table 3.1. *Descriptive Data for Pilot Pretest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	34	92.06	71	114	11.04	-0.13	-0.72
Learner Initiative	34	20.74	15	27	3.05	0.09	-0.71
Learner Control	34	23.24	17	29	3.25	-0.18	0.65
Learner Self-Efficacy	34	24.64	18	30	3.43	-0.25	-0.77
Learner Motivation	34	23.44	17	30	3.46	-0.03	-0.77

Table 3.2. *Descriptive Data for Pilot Pretest with an Associated Posttest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	11	97.54	83	114	10.42	0.07	-1.58
Learner Initiative	11	22.55	17	27	8.05	-0.49	-1.00
Learner Control	11	24.18	20	29	3.04	0.09	-1.48
Learner Self-Efficacy	11	26.09	23	30	2.61	0.38	-1.58
Learner Motivation	11	24.72	20	30	2.89	0.11	-0.63

Table 3.3. *Descriptive Data for Pilot Posttest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	11	101.81	76	120	11.18	-0.71	1.53
Learner Initiative	11	23.27	17	30	3.47	-0.18	0.52
Learner Control	11	24.64	17	30	3.55	-0.36	0.62
Learner Self-Efficacy	11	27.09	21	30	2.54	-1.05	1.72
Learner Motivation	11	26.82	21	30	2.66	-0.99	1.53

Table 3.4. *Descriptive Data for Change between Pretest and Posttest Scores*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	11	4.23	-7	10	7.75	0.29	-0.39
Learner Initiative	11	.73	-4	3	2.49	0.38	2.05
Learner Control	11	.45	-4	1	2.42	-0.55	-0.17
Learner Self-Efficacy	11	1.00	-6	9	3.41	0.63	0.11
Learner Motivation	11	-1.05	-10	8	4.06	0.32	-0.04

The mean for the subgroup of pretest respondents who also took the posttest was higher than that of the entire pretest group. The difference between pretest and posttest scores increased in total score, learner initiative, learner control, and learner self-efficacy. There was a decrease in mean score for learner motivation.

Protection of Human Rights

This research was conducted in accordance with the policies of the Institutional Review Board (IRB) of Kansas State University (Appendix E) and in coordination with the IRB of the United States Army Command and General Staff College (Appendix F). The rights and privacy of study participants has been the utmost consideration throughout the planning and conduct of this study.

Approval for the study of human subjects was requested and received through both the U.S. Army Command and General Staff College and the Kansas State University Institutional Review Boards. The survey was coordinated with the CGSS Quality Assurance Officer as an online instrument. Participants were informed about the purpose of the research and how the data were intended to be used. All references to personal information in the surveys were removed from the responses. Results were not used for purposes of evaluating academic performance nor was the data used for personnel / human resource decisions. All copies of the informed consent forms (Appendix D) were retained by CGSS Quality Assurance Office.

Summary

The methodology of this study included both presentation of the design and the setting in which the study occurred. The selection of sample criteria and data collection processes were reviewed. A description of the reliability and validity of the PRO-SDLS was provided. A description of the statistical methods conducted to analyze the data was also presented as was a description of the piloting of this research at the preceding CGSOC class. Chapter 4 presents the results of that analysis.

Chapter 4 - Analysis of Data and Results

Introduction

This research examined if a change in a learner's level of self-directed learning occurred over the duration of a 10-month graduate level resident course. It also examined changes in both the learner-teacher transaction and the learner characteristics of self-directed learning. The Personal Responsibility Orientation to Self-Direction in Learning Scale (PRO-SDLS) (Stockdale, 2003) assessed change based in self-directed learning on a total score as well as four subcomponent scores: learner initiative, learner control, learner self-efficacy, and learner motivation. The PRO-SDLS was administered to all Army officers attending the Command and General Staff College, Fort Leavenworth, Kansas, from August 2014 to June 2015. This exploratory study assessed the outcomes based on the dependent variables of gender, race/ethnicity, level of education, and branch of Army. Pretest and posttest responses from 40 individuals were analyzed in order to address five research questions. This chapter provides the survey results.

Population and Survey Response

All 836 Army officers attending the Command and General Staff Officer's Course (CGSOC), class 2015 were invited via e-mail to take the pretest PRO-SDLS online. In addition to the 25 questions on the PRO-SDLS respondents were asked to respond to questions relating to gender, race/ethnicity, level of education, and branch of the Army. Of the 836 Army respondents, 158, (19 percent), answered all 25 questions.

All of the 158 respondents in the pretest PRO-SDLS were invited via e-mail to take the posttest PRO-SDLS survey on line. In addition to the 25 questions on the PRO-SDLS respondents were asked to respond to a questions relating to their belief of whether attending CGSOC caused a change in their level of initiative, control, self-efficacy, or motivation. Posttest respondents were then prompted to provide a narrative response to elaborate on their belief that change had or had not occurred as a result of attending CGSOC. Of the 158 Army respondents to the pretest, 40, (25 percent), answered all 25 questions on the posttest survey. The table 4.1. depicts these respondents by dependent variable.

Table 4.1. *Demographic Data Pretest and Posttest Respondents*

Independent Variable	Pretest n=158	percent	Posttest n=40	percent
Gender				
Male	126	79.8%	35	87.5%
Female	28	17.7%	4	10.0%
No Answer	4	2.5%	1	2.5%
Total	158	100%	40	100%
Race/Ethnicity				
White non-Hispanic	123	77.8%	35	87.5%
Black non-Hispanic	15	9.5%	1	2.5%
Asian non-Hispanic	13	8.3%	1	2.5%
Other non-Hispanic	5	3.2%	2	5.0%
Hispanic	1	0.6%	0	0.0%
No Answer	1	0.6%	1	2.5%
Total	158	100%	40	100%
Branch of Army				
Operations	65	41.1%	19	47.5%
Operations Support	24	15.2%	2	5.0%
Force Sustainment	26	16.5%	6	15.0%
Special Services	13	8.2%	4	10.0%
No Answer	30	19.0%	9	22.5%
Total	158	100%	40	100%
Education				
Bachelor's Degree	88	55.7%	24	60.0%
Master's Degree	54	34.3%	13	32.5%
Doctoral Degree	9	5.7%	3	7.5%
No Answer	2	1.3%	0	0.0
Total	158	100%	40	100%

CGSOC did not track gender or race/ethnicity by service, however, having over three quarters of the respondents being male is consistent with the overall CGSOC population which had an 85% male population. The demographic data revealed that the ethnic makeup of the respondents was somewhat diverse and in general resembled the overall class demographic which had a 75% white population. The rise in percentage of white respondents in the posttest reduced the level of diversity among the posttest population. The demographic survey also asked about their level of education. The percentage of respondents with a bachelor's degree is above the overall CGSOC population. The percentage of respondents with a master's degree; however, is under the overall CGSOC demographic of 62%.

Respondents were also asked to provide their Army branch. The number of operations branch respondents resembled the overall class population of 45%. Operations support branch pretest respondents resembled the overall class population of 18% in the pretest but not in the posttest. Force sustainment branch respondents fell under the overall CGSOC populations of 23% for both the pretest and posttest. Special staff branch respondents also fell under the overall CGSOC populations of 14%.

Analysis of Research Questions

Five research questions guided this study. Although skewness and kurtosis revealed a normal distribution of the data, the small sample size for some of the independent variable categories warranted applying both parametric and non-parametric statistics. Following is a summary of the findings for each of the research questions.

Research Question One

Does the level of self-directed learning change from pretest to posttest among the Army student population at the Army's Command and General Staff Respondent's Course? If so, how, and to what extent.

One hundred fifty eight Army respondents answered all questions on the pretest PRO-SDLS. Descriptive data for the all respondents of the pretest survey are provided in Table 4.2. Of those 158, 40 completed the posttest PRO-SDLS. Descriptive pretest data for these respondents are provided in Table 4.3. Descriptive posttest data for the 40 respondents who completed the posttest survey are provided in Table 4.4. Standard deviation is within normal parameters and for total score is consistent with other PRO-SDLS pretest posttest experiments (Fogerson, 2006; Hall, 2011; Stockdale, 2003). Measures of standard deviation, skewness and kurtosis indicate an approximately normal distribution validating the assumption of normality.

Tables 4.2. and 4.3. demonstrate that the subgroup of the pretest respondents who also took the posttest were not markedly difference in means from the total group (n=158) for any of the assessed scores.

Table 4.2. *Descriptive Data for PRO-SDLS Pretest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	158	93.47	63	125	11.30	0.29	0.16
Learner Initiative	158	20.91	10	30	3.70	0.32	0.17
Learner Control	158	23.45	12	30	3.12	-0.33	0.51
Learner Self-Efficacy	158	24.48	13	30	3.21	-0.43	0.41
Learner Motivation	158	24.64	10	35	4.20	-0.41	0.92

Table 4.3. *Descriptive Data for PRO-SDLS Pretest with an Associated Posttest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	40	93.48	63	119	11.60	0.08	0.18
Learner Initiative	40	20.38	13	29	3.45	0.68	0.50
Learner Control	40	23.45	12	29	3.65	-0.59	1.00
Learner Self-Efficacy	40	24.70	13	30	3.37	-0.82	2.15
Learner Motivation	40	24.95	13	33	3.81	-0.36	1.40

Table 4.4. *Descriptive Data for PRO-SDLS Posttest*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	40	93.40	70	115	12.63	-0.14	-1.05
Learner Initiative	40	21.10	13	29	4.27	-0.04	-0.84
Learner Control	40	23.48	15	30	3.76	-0.25	-0.70
Learner Self-Efficacy	40	25.18	17	30	3.34	-0.43	-0.31
Learner Motivation	40	23.90	11	31	4.71	-0.64	-0.03

When the pretest to posttest scores were compared, it appeared that change occurred over the course of CGSOC. The least change occurred in the subcomponent, learner control. Of the subcomponent scores the only decline in score was in learner motivation. The decline in learner motivation was enough to result in a decline in total score. While learner control, learner self-efficacy, and learner motivation were skewed negatively in the pretest, in the posttest results all scores were negatively skewed indicating that the mass of the distribution is to the right. Measures of kurtosis indicate that all scores on the pretest had a relatively peaked distribution, whereas all scores on the posttest had a relatively flat distribution.

The table below provides descriptive data for changes in PRO-SDLS score from pretest to posttest. The measures of standard deviation, skewness and kurtosis for change in scores also indicate the difference in scores is normally distributed.

Table 4.5. *Descriptive Data for Change between Pretest and Posttest Scores*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score	40	- 0.08	-19	25	10.75	0.38	-0.51
Learner Initiative	40	.73	-7	8	3.32	-0.03	-0.07
Learner Control	40	.03	-6	8	2.95	0.54	0.72
Learner Self-Efficacy	40	.48	-6	9	3.41	0.63	0.11
Learner Motivation	40	-1.05	-10	8	4.06	0.32	-0.04

Table 4.5. above indicates the degree of change in mean scores pretest to posttest. A T-test for dependent means was conducted to determine significance. Table 4.6. below indicates that neither the change in total score nor the change in the four subcomponent paired scores: learner initiative, learner control, learner self-efficacy, and learner control were significant.

Table 4.6. *T-test for 2 Dependent Means - Pretest to Posttest*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	-0.043587	0.965456	N
Learner Initiative	1.362076	0.18099	N
Learner Control	0.053009	0.957995	N
Learner S-Efficacy	0.870981	0.389095	N
Learner Motivation	-1.616857	0.11397	N

As a secondary measure to assess the null hypothesis, the Wilcoxon Signed-Rank test, was conducted on the paired total scores as well as for the four subcomponent paired scores. The Wilcoxon Signed-Rank test evaluated the difference between treatments where the samples were correlated but not assumed to be normally distributed. The Wilcoxon Signed-Rank test indicated that all scores except for learner control, were distributed approximately normal, therefore the resulting Z-scores and p-values were used to determine significance at 0.05 for the two tailed hypothesis. The results are shown in Table 4.7.

Table 4.7. *Wilcoxon Signed-Rank Test of Difference Pretest to Posttest*

Description	W-Value	Z-value	p value	Significant at $p \leq 0.05$
Total Score		-0.2218	0.82588	N
Learner Initiative		-1.3677	0.17068	N
Learner Control	222	(critical value of W for n=30 is 137)		N
Learner Self-Efficacy		-0.4488	0.65272	N
Learner Motivation		-1.6889	0.09102	N

After the final question on the PRO-SDLS respondents were asked to indicate their level of agreement or disagreement to a series of statements regarding their belief of whether changes in their self-directed learning occurred as a result of attending CGSOC. Table 4.8. depicts their answers.

Table 4.8. *Respondent Belief Regarding Change*

Description	N	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Learner Initiative	40	2	9	21	6	2
Learner Control	40	1	6	22	10	1
Learner Self-Efficacy	40	2	4	22	10	2
Learner Motivation	40	2	3	27	6	2

Respondents were then asked to answer one of two narrative response questions based on their response to the above statement. This two question option appeared for each of the subcomponents of the PRO-SDLS.

Learner Initiative – Agree/Strongly Agree. Of the 11 who responded Agree or Strongly Agree to the statement, "My learner initiative changed as a result of attending CGSOC" seven respondents provided a narrative response to the request, "Please describe the change in your initiative to learn and to what do you attribute that change."

(1) During tactical portions of the course I tried to help those who needed help and would bring in products and information. Some topics also interested me more than others and caused me to take more initiative to learn and do outside research. Particularly during O399 when we worked on the Iraq Army design project, this project made me do a lot of reading and research outside of the requirements and share articles with classmates to help the group understand the problem.

(2) I realized that there is a lot that I don't know about. So, I do outside research, on my own time, to fill in previous knowledge gaps.

(3) I am an absolute sponge for knowledge now. Military and non-military, as a result of things learned and experiences shared.

(4) More confident in my ability to learn to learn new things.

(5) Motivated to learn in preparation for the rigors of the professional experiences I'll face beyond the course.

(6) CGSOC has not really changed my initiative to learn. However, it has changed my ability to understand the value of diverse tools/concepts that otherwise would have not appeared to be applicable.

(7) Treated and expected to perform yields performance. Not hounded and driven.

Learner Initiative – Neither Agree nor Disagree, Disagree, Strongly Disagree. Of the 29 who responded Neither Agree nor Disagree, Disagree or Strongly Disagree to the statement, "My learner initiative changed as a result of attending CGSOC" 10 respondents provided a narrative response to the request, "Please describe why your initiative to learn did not change."

(1) I have always had initiative to learn. CGSC has not altered that in any way, either positive or negative.

(2) I have a job that requires I learn or I can get people killed. My initiative is the same.

(3) My desire and initiative to learn new things that pertain to my current career, future career ideas, and personal interests has not changed. there were some new ideas and perspectives that came from my staff group, but my overall habits, initiative, motivation, and control have not changed from what they were prior to coming to CGSC.

(4) I have always placed a very high value on education. My initiative to learn did not change as a result of CGSC, but it did not drop either. Since college I have maintained a fairly steady initiative to learn… knowledge is power, etc. I was raised by a teacher and learning was drilled into us as a priority. Especially with nine months to focus on studies, my initiative did not change… had I been assigned to satellite or 'box of books' ILE, my initiative to learn would likely have dropped due to competing requirements.

(5) I have always taken initiative to learn. CGSC hasn't changed that.

(6) I arrived at CGSC with a well-developed initiative to learn. If this initiative were to develop even further, it would have to compete against the time constraints imposed by a heavy burden of reading and writing assignments required for earning the CGSC diploma--many of which added little to the learning process.

(7) My initiative to learn did not change because the majority of topics studied at CGSC do not interest me and never will. I have an initiative to learn when topics interest me.

(8) The amount of time invested into this course does not compliment the amount learned. Very disproportional. The sacrifice to family time is not acceptable.

(9) CGSC does not encourage learning. It encourages rote memorization and recital, and regurgitation (of) the party line. In every class except my history class, there was no room for discussion or discourse. Alternate points of view were allowed until they were not what the instructor wanted to hear, at which point discussion was shut down. "Papers" did not require analysis or synthesis and were graded along the lines of how well one could repeat the key terms, buss words, and themes of the block's lessons. With a "learning" environment like this, who takes initiative to learn? I did just what was required to get a good grade, anything else was a waste of my time and breathe.

(10) I realized early on in CGSC that the school is NOT a graduate level course of study, very demotivating.

Learner Control – Agree, Strongly Agree. Of the seven who responded Agree or Strongly Agree to the statement, "My learner control changed as a result of attending CGSOC" five respondents provided a narrative response to the request, "Please describe the change in your control to learn and to what do you attribute that change."

(1) I was forced to make time to learn. With two kids under three and a working spouse, the curriculum workload forced my wife and me to regularly sit down and scrub the calendar. We were forced to prioritize my nights against her work schedule and childcare. As a team we had to maintain positive control of time rather than consistently react as the calendar filled and we scrambled to organize. Blocking off slices of time allowed me to control my learning environment; in the past I had not necessarily had so many competing requirements, thus did not have a need to so actively maintain a calendar.

(2) I used to just follow routine, now I create and drive a routine that makes me better.

(3) I learned that I can perform at or above the level of my peers with time spent learning on my own.

(4) Gained a better understanding of self-study and time management.

(5) GCSC provided opportunities to apply learning in groups with peers.

Learner Control – Neither Agree nor Disagree, Disagree, or Strongly Disagree. Of the 33 who responded Neither Agree nor Disagree, Disagree, or Strongly Disagree to the statement, "My learner control changed as a result of attending CGSOC" five respondents provided a narrative response to the request, "Please describe why your control to learn did not change."

(1) I maintained the same work ethic that I had in college: do what is expected from the eyes of the instructor.

(2) CGSC did not teach me anything about myself that I didn't already know, so I disagree.

(3) CGSC did nothing to develop my control to learn.

(4) I ended up doing much self-learning and further exploration because the classroom discussions and assignments were inadequate about 50% of the time.

(5) The time constraints imposed by the number of reading and writing assignments required for earning the CGSC diploma did exercise my time management skills, but typically only because these out-of-class assignments were combined with a misguided amount of in-class hours spent in discussion rather than allowing respondents the opportunity to critically research, reflect and write. I do not feel my control to learn changed, as I am still a self-motivated learner who shows the discipline to learn about fields that interest me, or I have recognized are important to my professional development. However, the imposed time constraints did not allow me to further develop my discipline/self-control during the CGSC period.

Self-Efficacy – Agree, Strongly Agree. Of the six who responded Agree or Strongly Agree to the statement, "My learner self-efficacy changed as a result of attending CGSOC" eight respondents provided a narrative response to the request, "Please describe the change in your self-efficacy to learn and to what do you attribute that change."

(1) I learned to better prioritize readings and projects to ensure I got them done on time. Using free time during the week to finish projects to free up time on the weekend to work on graduate school was also a technique I used to meet all requirements.

(2) During CGSC I've been concurrently pursuing a Master of Science in Engineering and Technology Management, 12 total credits. With the combined workload, CGSC has made me a more effective written communicator and has given me the ability to sift through a large amount of data to pull out the salient point.

(3) Completing the MMAS process greatly aided in the development of my learning ability. Prior to this course, I had never attempted a project of similar scope, but the MMAS provided me an opportunity to broaden myself academically. This also led to developing greater initiative in the research process as well as self-motivation to complete the project.

(4) Dedicating time to reflect on the lessons learned.

(5) I was able to see if my self-efficacy matched my previous innate curiosity to read college level material, and it does, though within the classroom, I pushed myself more.

(6) I conducted research into the role of self-theory as part of my MMAS. Understanding entity and incremental self-theories of intelligence helped focus my learning on the quality of my efforts more than my innate abilities.

(7) Prioritization of reading requirements.

(8) I have better time management skills, faster reading and comprehension capabilities, and learned to prioritize.

Self-Efficacy – Neither Agree nor Disagree, Disagree, Strongly Disagree. Of the 33 who responded Disagree or Strongly Disagree to the statement, "My learner self-efficacy changed as a result of attending CGSOC" seven respondents provided a narrative response to the request, "Please describe why your self-efficacy to learn did not change."

(1) I have always maintained a fairly high belief in my ability to learn…especially given the time. I was confident that I would succeed at CGSC as I was afforded 9 months away from the operational force. I previously attempted grad schools while working full time (with 2 kids under 3 and a working spouse). I was unable to finish that course, but I was aware of that risk going in. I enjoy learning, reading, and the general academic environment. Those feelings/beliefs existed prior to CGSC and will continue following graduation.

(2) CGSC did not teach me anything about myself that I didn't already know, so I disagree.

(3) There aren't any new habits that CGSC created or influenced in my learning style or abilities. Being mid-career and having attended a four year university I'm set in my learning style and know my strengths and weaknesses.

(4) On the basis of habits formed during my undergraduate and graduate studies, which were further honed during my preceding years of service in the Army, I was certain of my ability to compete the studies required during CGSC.

(5) I have always believed I was academically capable. CGSC hasn't changed how I feel about that.

(6) Because I already had self-efficacy.

(7) I have already completed two graduate level degrees, CGSC was a step back in adult learning from my perspective so this really wasn't a challenge nor did it meet my educational expectations.

Learner Motivation – Agree, Strongly Agree. Of the five who responded Agree or Strongly Agree to the statement, "My learner motivation changed as a result of attending CGSOC" five respondents provided a narrative response to the request, "Please describe the change in your initiative to learn and to what do you attribute that change."

(1) CGSC gives a greater perspective of an officer's role within the Army profession and within the strategic framework within which field grade respondents operate. Understanding how my efforts may help contribute to shaping the future Army is very motivating.

(2) A number of novel topics introduced motivated me to learn more.

(3) Motivated to learn in preparation for the rigors of the professional experiences I'll face beyond the course.

(4) I now understand that written communication is a perishable skill and must be practiced. I am going to continue to write to enhance my written communication skills.

(5) I want to know things and have new things to learn and share.

Learner Control – Neither Agree nor Disagree, Disagree, or Strongly Disagree. Of the 35 who responded Disagree or Strongly Disagree to the statement, "My learner motivation changed as a result of attending CGSOC" fives respondents provided a narrative response to the statement, "Please describe why your motivation to learn did not change."

(1) I feel I arrived at CGSC with a well-developed motivation to learn. I read routinely in my off time regarding international relations and the current geopolitical situation, despite this being far afield from my specific area of expertise within the Army.

(2) My motivation to learn did not change because my motivation level was well-established prior to attending CGSC. I have been in school for the majority of my life; attending CGSC only sparked my interest in a few topics.

(3) I have a job that requires I learn or I may get someone needlessly killed. My motivation is the same.

(4) I have always had an interest in learning, CGSC has not changed that.

(5) I have always been motivated to learn. CGSC hasn't changed that.

Question One – Summary. The data reveal that scores changed between the pretest and posttest administration of the PRO-SDLS. However, parametric and nonparametric statistical analysis failed to show significance at the .05 level. While not generalizable, qualitative analysis of narrative responses provided an understanding of the variances in score between pretest and posttest administration. Of those who felt their level of self-directed learning increased in initiative, control, self-efficacy, or motivation the preponderance of responses indicate that CGSOC and its curriculum and method of instruction were responsible for the increase. Also of note regarding those who agreed with a positive change was the linking of that positive change to the concurrent pursuit of a master's degree, which is not part of the CGSOC curriculum. Of those who felt their level of self-directed learning did not change in initiative, control, self-efficacy, or motivation, the preponderance of the responses indicate that they felt they arrived with an already heightened level and CGSOC did not change their existing level of self-directed learning.

Research Question Two

Does a change in the level of self-directed learning correlate to the learner characteristic of gender? If so, how, and to what extent.

The total score mean for men dropped over the course of CGSOC whereas the total score of women increased. Women's scores were either more positive or less negative than men's scores in learner initiative, learner control, and learner motivation. In the area of learner self-efficacy, women indicated no change, whereas the men indicated an increase.

Table 4.9. *Descriptive Data of PRO-SDLS Score change by Gender*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score (m)	36	-0.36	-19	25	10.66	0.45	-0.35
Total Score (f)	4	2.50	-14	17	11.15	-0.44	0.89
Lrnr Initiative (m)	36	0.56	-7	8	3.32	-0.07	-0.13
Lrnr Initiative (f)	4	2.25	-1	7	2.95	1.20	1.98
Lrnr Control (m)	36	0.00	-6	8	2.92	0.74	1.03
Lrnr Control (f)	4	0.25	-5	3	3.11	-1.70	3.01
Lrnr S-Efficacy (m)	36	0.53	-4	9	3.30	0.81	0.25
Lrnr S-Efficacy (f)	4	0.00	-6	6	4.24	0.00	1.50
Lrnr Motivation (m)	36	-1.17	-10	8	4.21	0.39	-0.13
Lrnr Motivation (f)	4	0.00	-2	2	2.00	0.00	-6.00

Table 4.9. depicts the mean score change by gender. While the scores of men appear to have normal distributions as indicated by skewness and kurtosis, the scores of women do not appear to reflect a normal distribution in leaner initiative or learner control. Measures of Kurtosis indicate that the women's scores for learner motivation are also not normally distributed.

Table 4.10. *Pearson Correlation Coefficient – Gender – Male*

PRO-SDLS	r	Relationship	r^2
Total Score	0.6121	positive	0.3747
Learner Initiative	0.6189	positive	0.383
Learner Control	0.7	positive	0.49
Learner Self-Efficacy	0.5235	positive	0.2741
Learner Motivation	0.5591	positive	0.3126

The Pearson Correlation Coefficient indicated that there was a positive correlation between the pretest and posttest scores of men. Where the pretest score of a man was high the associated posttest score was also high and vice versa. The test was not performed for women's scores as the sample was too small.

Table 4.11. *T-test for 2 Dependent Means Pretest to Posttest Scores – Gender – Male*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	-0.200734	0.842348	N
Learner Initiative	0.989870	0.329032	N
Learner Control	0.0	1.00	N
Learner S-Efficacy	0.947466	0.349898	N
Learner Motivation	-1.640825	0.109791	N

The above T-test for 2 dependent means revealed that the change in scores for men was not significant at the $p \leq .05$ level for any of the scores assessed. This test could not be performed on women's scores because the sample was too small.

Table 4.12. *Wilcoxon Signed-Rank Test – Gender – Male*

Description	W-Value	Z-value	p-value	Significant at $p \leq 0.05$
Total Score		-04478	0.65272	N
Learner Initiative		-1.0386	0.29834	N
Learner Control	160.0	(critical value of W for n=26 is 98)		N
Learner Self-Efficacy	212.5	(critical value of W for n=30 is 137)		N
Learner Motivation		-1.6549	0.09894	N

As discussed earlier a non-parametric test was also conducted and revealed the results for learner control and learner self-efficacy were not normally distributed. This nonparametric test; however, also failed to indicate a level of significance in the change. This test could not be performed on women's scores due to the small sample size.

Table 4.13. *T-test (for two Independent Means) – Gender – Male/Female*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	0.493974	0.312084	N
Learner Initiative	0.953916	0.173078	N
Learner Control	0.157027	0.438027	N
Learner S-Efficacy	0.286891	0.387877	N
Learner Motivation	0.53399	0.298229	N

A Student T-test for two independent means was conducted to determine if the change in scores was significant when the scores of men were compared to the scores of women. The Student T-test indicated that the changes between genders was not significant. A nonparametric test could

not be conducted to assess the difference in scores between genders because the women's sample size was too small to allow a comparison using the nonparametric Mann-Whitney U-Value test.

Question Two – Summary. For men, there was a positive correlation between pretest and posttest scores of the PRO-SDLS. Parametric and nonparametric statistical analysis failed to show significance at the .05 level. A Parametric statistical test was used to compare the difference in scores between men and women and failed to show significance at the .05 level. The women's sample was too small to compare their pretest to posttest scores or compare men's and women's scores using parametric tests.

Research Question Three

Does a change in the level of self-directed learning correlate to the learner characteristic of race/ethnicity? If so, how, and to what extent.

Table 4.14. depicts the mean score change by race/ethnicity category. While the white scores appear to have normal distributions as indicated by skewness and kurtosis, the non-white scores do not appear to reflect a normal distribution in learner control, learner self-efficacy, or learner motivation.

Table 4.14. *Descriptive Data of Change in Scores by Race/Ethnicity*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score (w)	36	-1.03	-19	19	9.80	0.32	-0.49
Total Score (n-w)	4	8.50	-14	25	14.47	-0.93	0.78
Lrnr Initiative (w)	36	0.53	-7	8	3.36	0.06	0.02
Lrnr Initiative (n-w)	4	2.50	-1	5	2.29	-0.86	-0.29
Lrnr Control (w)	36	0.03	-6	8	2.81	0.57	1.11
Lrnr Control (n-w)	4	0.00	-5	6	3.94	0.64	1.50
Lrnr S-Efficacy (w)	36	0.22	-4	9	3.02	0.95	1.06
Lrnr S-Efficacy (n-w)	4	2.75	-6	7	5.31	-1.49	1.87
Lrnr Motivation (w)	36	-1.53	-10	8	3.82	0.35	0.39
Lrnr Motivation (n-w)	4	3.25	-2	7	3.56	-0.70	-1.65

The total score mean for whites dropped over the course of CGSOC whereas the total score for non-whites increased. Non-white scores were more positive than white scores in learner initiative, learner self-efficacy, and learner motivation. In the area of learner control, the non-whites indicated no change, whereas the whites indicated an increase.

Table 4.15. *Pearson Correlation Coefficient – Race/Ethnicity – White*

PRO-SDLS	R	Relationship	R^2
Total Score	0.6855	positive	0.4699
Learner Initiative	0.6256	positive	0.3914
Learner Control	0.7282	positive	0.5303
Learner Self-Efficacy	0.5975	positive	0.357
Learner Motivation	0.6304	positive	0.3974

The Pearson Correlation Coefficient indicated that there was a moderate positive correlation between the pretest and posttest scores for white respondents. Where the white respondent's pretest score was high the posttest score was also high and vice versa. The test was not performed on non-white respondent scores as the sample was too small to assess.

Table 4.16. *T-test for 2 Dependent Means Pretest to Posttest – Race/Ethnicity – White*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	-0.620672	0.538836	N
Learner Initiative	0.928654	0.359429	N
Learner Control	0.058409	0.953755	N
Learner S-Efficacy	0.435400	0.665945	N
Learner Motivation	-2.366886	0.0236	Y

The above T-test for 2 dependent means revealed that the change in scores for the white respondents was not significant at the $p \leq .05$ level for the total score, or the subcomponents scores for learner initiative, learner control, or learner self-efficacy. The results do indicate that the change in white scores for learner motivation are significant. This test could not be performed on the non-white sample because it was too small.

Table 4.17. *Wilcoxon Signed-Rank Test – Race/Ethnicity – White*

Description	W-Value	Z-value	p-value	Significant at $p \leq 0.05$
Total Score		-0.7541	0.45326	N
Learner Initiative		-0.9014	0.36812	N
Learner Control	179.5	(critical value of W for n=27 is 107)		N
Learner Self-Efficacy	198	(critical value of W for n=28 is 116)		N
Learner Motivation		-2.3654	0.01778	Y

As discussed earlier a non-parametric test was also conducted and revealed the same results as the parametric test including a significant result for the change in learner motivation. This nonparametric test could not be performed on the non-white data due to the small sample

size. Effect size for learner motivation was calculated as $r = z/\sqrt{n}$. The result was $r = 0.368241$ which indicates a small effect size.

Table 4.18. *T-test (for Two Independent Means) – Race/Ethnicity – White/Non-white*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	2.328963	0.025278	Y
Learner Initiative	1.115042	0.271835	N
Learner Control	0.017442	0.986175	N
Learner S-Efficacy	1.407915	0.167285	N
Learner Motivation	2.328963	0.025278	Y

A Student T-test for two independent means was conducted to determine if the change in scores was significant when white scores were compared to non-white scores. The Student T-test indicated that the changes between white and non-white was significant for both the change in total score and the change in learner motivation. A nonparametric test could not be conducted to assess the difference in scores between ethnicities because the non-white sample size was too small to allow a comparison using the nonparametric Mann-Whitney U-Value test. Effect size tests were conducted for both scores indicating a significant response. Cohen's d for total score was 0.77125349, indicating a medium effect size. Cohen's d for Learner Motivation was 1.29387117, indicating a large effect size.

Question Three – Summary. For whites, there was a moderate positive correlation between pretest and posttest scores of the PRO-SDLS. Parametric and nonparametric statistical analysis showed significance at the .05 level for the subcomponent score of learner motivation; however, the effect size was considered small. A parametric statistical test was used to compare the difference in scores between white and non-white and showed significance at the .05 level for both total score and the subcomponent of learner motivation. The effect size for total score is considered medium and the effect size for learner motivation is considered large. The non-white sample was too small to compare non-white pretest to posttest scores or to compare white and non-white using nonparametric tests.

Research Question Four

Does a change in the level of self-directed learning correlate to the learner characteristic of level of education? If so, how, and to what extent.

Table 4.19. *Descriptive Data of Change Pretest to Posttest by Level of Education*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score (b)	24	-0.63	-19	19	11.08	0.11	-0.92
Total Score (m)	16	0.75	-11	25	10.16	1.02	0.35
Lrnr Initiative (b)	24	0.54	-7	6	3.27	-0.50	-0.03
Lrnr Initiative (m)	16	1.00	-4	8	3.39	-0.60	-0.15
Lrnr Control (b)	24	-0.21	-6	8	3.24	0.67	0.87
Lrnr Control (m)	16	0.38	-3	6	2.39	0.47	0.37
Lrnr S-Efficacy (b)	24	0.38	-6	9	3.67	0.63	0.17
Lrnr S-Efficacy (m)	16	0.63	-4	7	2.96	0.78	0.08
Lrnr Motivation (b)	24	-0.92	-10	8	4.12	0.32	0.40
Lrnr Motivation (m)	16	-1.25	-8	7	3.94	0.34	-0.45

Table 4.20. *Pearson Correlation Coefficient – Level of Education – Bachelor's Degree*

PRO-SDLS	r	Relationship	r^2
Total Score	0.5344	positive	0.2845
Learner Initiative	0.5916	positive	0.35
Learner Control	0.6058	positive	0.367
Learner Self-Efficacy	0.2831	positive	0.0801
Learner Motivation	0.3905	positive	0.1525

The Pearson Correlation Coefficient indicated that there was a moderate positive correlation between the pretest and posttest scores for respondents who had a bachelor's degree in total score and learner initiative and learner control and a weak correlation in learner self-efficacy and learner motivation.

Table 4.21. *T-test for 2 Dependent Means – Level of Education – Bachelor's Degree*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	-0.270466	0.789214	N
Learner Initiative	0.795458	0.43448	N
Learner Control	-0.308364	0.760581	N
Learner S-Efficacy	0.489756	0.628945	N
Learner Motivation	-1.066448	0.297288	N

The above T-test for 2 dependent means revealed that the change in scores for respondents with a bachelor's degree was not significant at the $p \leq .05$ level for any of the scores assessed.

Table 4.22. *Wilcoxon Signed-Rank Test – Level of Education – Bachelor's Degree*

Description	W-Value	Z-value	p-value	Significant at $p \leq 0.05$
Total Score	145	(critical value of W for n=24 is 81)		N
Learner Initiative	97	(critical value of W for n=22 is 65)		N
Learner Control	86	(critical value of W for n=20 is 52)		N
Learner Self-Efficacy	91	(critical value of W for n=19 is 46)		N
Learner Motivation	88.5	(critical value of W for n=22 is 65)		N

As discussed earlier a non-parametric test was also conducted and revealed the results for all scores were not normally distributed. This nonparametric test; however, also failed to indicate a level of significance in the change.

Table 4-23. *Pearson Correlation Coefficient – Level of Education – Master's Degree*

PRO-SDLS	r	Relationship	r^2
Total Score	0.6919	positive	0.4787
Learner Initiative	0.7195	positive	0.5177
Learner Control	0.8026	positive	0.6442
Learner Self-Efficacy	0.7013	positive	0.4918
Learner Motivation	0.6543	positive	0.4281

The Pearson Correlation Coefficient indicated that there was a moderate positive correlation between the pretest and posttest scores for respondents who had a master's degree in all scores except learner control. The correlation coefficient for learner control indicated a strong positive for respondents with a master's degree.

Table 4.24. *T-test for 2 Dependent Means – Level of Education – Master's Degree*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	0.285779	0.778956	N
Learner Initiative	1.142080	0.271324	N
Learner Control	0.606504	0.553249	N
Learner S-Efficacy	0.819049	0.425581	N
Learner Motivation	-1.227202	0.23866	N

Table 4.25. *Wilcoxon Signed-Rank Test – Level of Education – Master's Degree*

Description	W-Value		Z-value	p-value	Significant at p ≤ 0.05
Total Score	66.5	(critical value of W for n=16 is 29)			N
Learner Initiative	32	(critical value of W for n=13 is 17)			N
Learner Control	24	(critical value of W for n=10 is 8)			N
Learner Self-Efficacy	39	(critical value of W for n=13 is 17)			N
Learner Motivation	32.5	(critical value of W for n=14 is 21)			N

Table 4.26. *T-test (for Two Independent Means) – Level of Education – Bachelor's/Master's*

Description	T-value	P-value	Significant at p ≤ 0.05
Total Score	0.387188	0.700777	N
Learner Initiative	0.417353	0.678769	N
Learner Control	0.600695	0.551431	N
Learner S-Efficacy	0.22182	0.825642	N
Learner Motivation	0.248415	0.805151	N

A Student T-test for two independent means was conducted to determine if the change in scores was significant when scores by those with a bachelor's degree were compared to scores of those with a master's degree. The Student T-test indicated that the changes between levels of education was not significant.

Table 4.27. *Mann-Whitney U-test – Level of Education – Bachelor's/Master's*

Description	U-Value	Z-score	p-value	Significant at p ≤ 0.05
Total Score	228.5	-0317705	0.750708	N
Learner Initiative	195	-0.082824	0.933992	N
Learner Control	236	1.959964	0.397101	Y
Learner Self-Efficacy	202	-0.276079	0.782488	N
Learner Motivation	182	0.276079	0.782488	N

A nonparametric was conducted to assess the difference in scores between levels of education. Only the subcomponent of learner control was significant; however, the effect size is considered small.

Question Four – Summary. For bachelor's degree respondents there was a moderate positive correlation between pretest and posttest scores of the PRO-SDLS for total score, learner initiative, and learner control. There was a weak positive correlation for learner self-efficacy and learner motivation. For master's degree respondents there was a moderate positive correlation between pretest and posttest scores of the PRO-SDLS for total score, learner initiative, learner

self-efficacy, and learner motivation. There was a strong positive correlation for learner control. Parametric and nonparametric statistical analysis failed to show significance at the .05 level for changes between pretest and posttest scores for either the bachelor's degree or master's degree. Both parametric and nonparametric statistical tests were used to compare the difference in scores between bachelor's degree and master's degree respondents and showed significance at the .05 level for learner control for the non-parametric test; however, the sample size was considered small.

Research Question Five

Does a change in the level of self-directed learning correlate to the learner characteristic of branch of Army? If so, how, and to what extent.

Table 4.28. *Descriptive Data of Change in Scores Pretest to Posttest by Branch of Army*

Description	N	Mean	Min	Max	Std. Dev.	Skewness	Kurtosis
Total Score (o)	18	1.61	-15	19	9.39	0.43	-0.54
Total Score (os)	3	-1.67	-14	16	12.81	1.35	n/a
Total Score (fs)	6	-0.17	-15	25	12.64	1.32	2.49
Total Score (ss)	4	1.75	-11	6	7.36	-2.00	4.00
Lrnr Initiative (o)	18	1.06	-4	6	2.91	-0.18	-0.76
Lrnr Initiative (os)	3	0.33	-2	4	2.62	1.55	n/a
Lrnr Initiative (fs)	6	0.67	-2	5	2.21	1.22	2.11
Lrnr Initiative (ss)	4	0.05	-3	3	2.18	-1.13	2.23
Lrnr Control (o)	18	0.22	-5	6	2.25	0.18	2.41
Lrnr Control (os)	3	-2.00	-5	0	2.16	-1.46	n/a
Lrnr Control (fs)	6	-1.00	-6	-6	3.56	1.09	2.92
Lrnr Control (ss)	4	2.25	-2	8	3.76	0.83	-0.04
Lrnr S-Efficacy (o)	18	0.83	-2	9	2.81	1.38	2.39
Lrnr S-Efficacy (os)	3	-1.00	-6	7	5.72	1.57	n/a
Lrnr S-Efficacy (fs)	6	0.83	-4	7	3.48	0.55	0.55
Lrnr S-Efficacy (ss)	4	-1.00	-4	2	2.26	0.00	-1.20
Lrnr Motivation (o)	18	-0.50	-5	8	3.56	1.11	0.87
Lrnr Motivation (os)	3	1.00	-2	6	3.56	1.63	n/a
Lrnr Motivation (fs)	6	-0.67	-5	7	4.03	1.13	1.08
Lrnr Motivation (ss)	4	-2.00	-8	3	4.64	-0.23	-4.34

Table 4.28. depicts the mean score change by branch of Army. While the operations and force sustainment branches appear to have normal distributions as indicated by skewness and kurtosis, the larger numbers of skewness and kurtosis for operations support and special staff branches may be due to the small sample size. As a result both parametric and nonparametric statistics will be used to assess the data.

The total score mean for special staff branch respondents was positive and larger than any other branch change in total score. The special staff branch and operations branch respondents both exhibited a positive total change, whereas the operations support and force sustainment branch respondents had a negative change in total score.

All branches had a positive change in the subcomponent score of learner initiative, with operations branch respondents exhibiting the largest change. Subcomponent scores for learner control, learner self-efficacy, and learner motivation were mixed across branches.

Table 4.29. *Pearson Correlation Coefficient – Branch of Army – Operations*

PRO-SDLS	r	Relationship	r^2
Total Score	0.7388	positive	0.5458
Learner Initiative	0.7455	positive	0.5558
Learner Control	0.8496	positive	0.7218
Learner Self-Efficacy	0.6879	positive	0.4732
Learner Motivation	0.7122	positive	0.5072

The Pearson Correlation Coefficient indicated that there was a moderate positive correlation between the pretest and posttest scores for operations branch respondents in all scores except learner control. The correlation coefficient for learner control indicated a strong positive for operations branch respondents meaning a high pretest score is associated with a high posttest score and vice versa. The test was not performed on operations support branch or special staff branch respondents as the samples were too small to assess.

Table 4.30. *T-test for 2 Dependent Means of Difference Pretest to Posttest – Br Army – Opns*

Description	T-value	P-value	Significant at $p \leq 0.05$
Total Score	0.707614	0.488773	N
Learner Initiative	1.493052	0.153751	N
Learner Control	0.407251	0.688906	N
Learner S-Efficacy	1.221158	0.238692	N
Learner Motivation	-0.578612	0.570438	N

The above T-test for 2 dependent means revealed that the change in scores for operations branch respondents was not significant at the $p \leq .05$ level for any of the scores assessed. This test could not be done for operations support or special staff branches because the sample size was too small.

Table 4.31. *Wilcoxon Signed-Rank Test – Branch of Army – Operations*

Description	W-Value	Z-value	p-value	Significant at $p \leq 0.05$
Total Score	76	(critical value of p for n=18 is 40)		N
Learner Initiative	31	(critical value of p for n=14 is 21)		N
Learner Control	28	(critical value of p for n=11 is 10)		N
Learner Self-Efficacy	37.5	(critical value of p for n=14 is 21)		N
Learner Motivation	54.5	(critical value of p for n=17 is 34)		N

A nonparametric test indicated that the data for operations branch respondents was not normally distributed. Because of this neither the Z-value nor p-value could be used to test significance. The nonparametric test also indicated that the change in scores for operations branch respondents was not significant. This nonparametric test could not be performed on operations support or special staff branches due to the small sample size.

Table 4.32. *Pearson Correlation Coefficient – Branch of Army – Force Sustainment*

PRO-SDLS	r	Relationship	r^2
Total Score	0.1095	positive	0.012
Learner Initiative	0.6502	positive	0.4228
Learner Control	0.0656	positive	0.0043
Learner Self-Efficacy	0.2028	positive	0.0411
Learner Motivation	0.3483	positive	0.1213

The Pearson Correlation Coefficient indicated that there was a positive correlation between the pretest and posttest scores for force sustainment branch respondents in all scores except learner control. Although there is positive relationship between the scores the closer the scores are to zero the weaker the relationship.

Table 4.33. *T-test for 2 Dependent Means of Difference Pretest to Posttest – Br Army – FS*

Description	T-value	P-value	Significant at p ≤ 0.05
Total Score	-0.029481	0.977622	N
Learner Initiative	0.674200	0.530092	N
Learner Control	-0.628281	0.557398	N
Learner S-Efficacy	0.534828	0.615688	N
Learner Motivation	-0.370117	0.726456	N

The above T-test for 2 dependent means revealed that the change in scores for force sustainment branch respondents not significant at the $p \le .05$ level for any of the scores assessed.

Table 4.34. *Wilcoxon Signed-Rank Test – Branch of Army – Force Sustainment*

Description	W-Value	Z-value	p-value	Significant at p ≤ 0.05
Total Score	8.5	(critical value of W for n=6 is 0)		N
Learner Initiative	sample size, n=5 is too small to calculate a W or Z and p value			
Learner Control	5.5	(critical value of W for n=6 is 0)		N
Learner Self-Efficacy	sample size, n=5 is too small to calculate a W or Z and p value			
Learner Motivation	sample size, n=5 is too small to calculate a W or Z and p value			

The Wilcoxon Signed-Rank test does not use paired samples when both values are the same, this meant that there were too few paired scores to assess learner initiative, learner self-efficacy, or learner motivation. The remaining data were not sufficiently normally distributed to use the Z-value or p-value to determine significance. Results for total score and learner control were not significant.

Table 4.35. *T-test (for Two Independent Means) – Branch of Army – Total Score*

Description	T-value	P-value	Significant at p ≤ 0.05
O to OS	0.502484	0.621101	N
O to FS	0.350624	0.729205	N
O to SS	0.026463	0.489575	N
OS to FS	0.147315	0.887037	N
OS to SS	0.375559	0.72265	N
FS to SS	0.244946	0.812664	N

A Student T-test for two independent means was conducted to determine if the change in scores was significant when between branches comparisons were made. The Student T-test indicated that the changes between branches was not significant. A nonparametric test could not be conducted to assess the difference in scores between branches because the sample sizes were

too small for operations support, force sustainment, and special staff branch respondents to allow a comparison using the nonparametric Mann-Whitney U-Value test. Results for the scores are depicted in tables 4.36. through 4.39.

Table 4.36. *T-test (for Two Independent Means) – Branch of Army – Learner Initiative*

Description	T-value	P-value	Significant at $p \leq 0.05$
O to OS	0.38313	0.705876	N
O to FS	0.2866	0.7771	N
O to SS	0.34277	0.735348	N
OS to FS	0.176383	0.864987	N
OS to SS	0.077475	0.94125	N
FS to SS	0.105045	0.918926	N

Table 4.37. *T-test (for Two Independent Means) – Branch of Army – Learner Control*

Description	T-value	P-value	Significant at $p \leq 0.05$
O to OS	1.515051	0.146219	N
O to FS	0.94073	0.357059	N
O to SS	1.349159	0.192363	N
OS to FS	0.394405	0.705022	N
OS to SS	1.470287	0.199129	N
FS to SS	1.235995	0.251519	N

Table 4.38. *T-test (for Two Independent Means) – Branch of Army – Learner Self-Efficacy*

Description	T-value	P-value	Significant at $p \leq 0.05$
O to OS	0.826319	0.418879	N
O to FS	0.0	1.00	N
O to SS	1.163549	0.258301	N
OS to FS	0.524831	0.615907	N
OS to SS	0.0	1.00	N
FS to SS	0.833758	0.428608	N

Table 4.39. *T-test (for Two Independent Means) – Branch of Army – Learner Motivation*

Description	T-value	P-value	Significant at $p \leq 0.05$
O to OS	0.642254	0.528382	N
O to FS	0.091869	0.927634	N
O to SS	0.684307	0.501635	N
OS to FS	0.536056	0.608524	N
OS to SS	0.788746	0.465996	N
FS to SS	0.431488	0.677506	N

Question Four – Summary. For operations branch respondents there was a moderate positive correlation between pretest and posttest scores of the PRO-SDLS for total score, learner initiative, learner self-efficacy, and learner motivation. There was a stronger positive correlation for learner control. For force sustainment branch respondents there was a weak positive correlation between pretest and posttest scores of the PRO-SDLS for total score, learner control, learner self-efficacy, and learner motivation. There was a moderate positive correlation for learner initiative. Correlations could not be evaluated for operations support or special staff respondents due to small sample size. Parametric and nonparametric statistical analysis failed to show significance at the .05 level for either operations or force sustainment branch respondents. A Parametric statistical test was used to conduct a pair-wise comparison of branches and failed to show significance at the .05 level meaning we cannot reject the null hypothesis.

Summary

An analysis of the data gathered revealed that in the aggregate there was a change in scores over the course of CGSOC for these respondents. More detailed analysis was conducted to determine if those changes were significant by the independent variables of gender, race/ethnicity, branch of Army, or level of education. Analysis of the data revealed four significant correlations.

The change in scores for white respondents was significant in the subcomponent of learner motivation; however the effect size was considered small. The change in scores between white and non-white respondents was significant for both total score and the subcomponent of learner motivation. The effect size for total score was considered medium and the effect size for learner motivation was considered large.

Finally, the difference in level of education was significant in the subcomponent of learner control when tested using non-parametric statistics; however the effect size was considered small. The comparison was not significant when tested using parametric statistics.

Chapter 5 will address the findings of this study including a discussion of the implications of the findings. The findings will also be used to make recommendations for further study.

Chapter 5 - Conclusions and Recommendations

Overview

This research examined the changes in student level of self-directed learning over the course of an academic year. This chapter includes a discussion of the findings, a comparison of the overall findings to previous studies, and implications for the Army as well as adult educators. The chapter concludes with recommendations for future research.

Discussion of Findings

Comparison to Previous Studies

The mean total score on the PRO-SDLS by Army officers completing only the prestest as well as those who completed both the pretest and the posttest reflected similar findings to previous studies employing the PRO-SDLS. Stockdale's (2003) original study examined both graduate and undergraduate students as did Fogerson's (2006) study. Hall (2011) tested undergraduate students entering college after a summer bridging program designed to improve their ability to succeed in a college environment. This exploratory study examined graduate level students. Only Fogerson's online learners at the graduate and undergraduate level achieved a higher mean than the graduate Army officers of this study. The only other study (Hall, 2011) employing a pretest post-test research methodology resulted in an increase in total score mean. This exploratory study, however, found an overall decrease in mean total score. When the subcomponent scores were examined, however, the decline in this study mean total score was due only to the dependent variable, learner motivation. All other dependent variables, learner initiative, learner control, and learner self-efficacy experienced an increase in score.

Table 5.1. *Comparison of Descriptive Statistics for PRO-SDLS*

Description	N	Mean	Std. Dev.
PRO-SDLS Total (Stockdale, 2003)	194	84.05	12.47
PRO-SDLS Total (Fogerson, 2006)	217	96.91	11.82
PRO-SDLS Total (Hall Pre-test)	110	89.62	10.03
PRO-SDLS Total (Hall Post-test)	110	91.17	10.92
PRO-SDLS Total pre-test only respondents	158	93.47	11.30
PRO-SDLS Total Pre-test	40	93.48	11.60
PRO-SDLS Total Post-test	40	93.40	12.63

The data appears consistent with other studies employing the PRO-SDLS in terms of mean and standard deviation. None of the studies mentioned above; however, provided subcomponent scores. The subcomponent scores were analyzed in this study using the same statistical techniques applied to total score in order to provide a deeper understanding of any change that occurred over the course of attending CGSOC.

Research Question 1

Does the level of self-directed learning change from pretest to posttest among the student population of the Army's Command and General Staff Officer's Course?

The change in pretest to posttest scores was not statistically significant either in total or by subcategory. While not statistically significant, differences in total score ranged from -19 to +25 and reflected a normal distribution. While quantitative analytics did not reveal a significant finding, the answers to four additional Likert scale questions and associated narrative answers provided by the respondents provided a personal narrative regarding the development of self-directed learning over the course of CGSOC.

Learner Initiative. Respondent's perceptions of their change in learner initiative did not always match their scores as assessed by the PRO-SDLS. Of the 40 respondents 24 correctly perceived their change in learner initiative. Six respondents overestimated their change and 10 underestimated their change. The variance in actual score to perceived change could be accounted for by the introduction of the phrase learner initiative. While assessed by the PRO-SDLS, the phrase learner initiative is not used and the first time the respondent sees this question is after both the pretest and posttest administration of the PRO-SDLS. Toyota (2015) found that word choice can affect memory and thus could account for the variance found in this study.

The respondents who claimed their level of learner initiative increased while at CGSOC attributed that change to learning in groups and the use of problem based curriculum. This supports a previous finding by Gaspar, Langevin, Boyer and Armitage (2009) that peer interaction allowed the learner to first assess their learning skills by measuring their ability against peer ability. If the learner validates their learning skills were appropriate the learner then moves onto validate the processes they use to learn. Validation of learning skills could account for the respondents who felt their learner initiative was not affected by attendance at CGSOC because they believe they arrived at CGSOC with an already developed sense of learner

initiative. While the PRO-SDLS places learner initiative as part of the teaching learning transaction, the word choice may have caused the respondent to understand it to be part of the learner characteristic. The movement from validation of learner characteristic to learning process is consistent with those who felt their learner initiative increased and attributed the increase to a focus on practical problem solving and facilitated discussion in small groups, both of which are process learning.

Comments from students who claimed their sense of learner initiative did not increase while at CGSOC cited a lack of ability to proceed at their own pace and the lack of a challenging learning environment. Dynan et al., (2008) found that the level of a student's self-directed learning at the beginning of an academic year was directly related to their ability to excel in an unstructured learning environment. Those who possessed high levels of self-directed learning skills exceeded in an unstructured environment while those who had lower skills languished in a unstructured environment. While the Dynan et al. study did not examine what happened to students with low self-directed learning skills in a structured environment or vice versa, they did find that "in a structured learning environment wherein students modeled faculty demonstrated inquiry, student SDL scores rose on an average of three percent" (Dynan, et al., 2008, p. 99).

Learner Control. Respondent's perceptions of their change in learner control also did not always match their scores as assessed by the PRO-SDLS. Of the 40 respondents, 22 correctly perceived their change in learner control. Twelve respondents overestimated their change and six underestimated their change. As with learner initiative the variance in actual score to perceived change could be accounted for in the introduction of the phrase learner control (Toyota, 2015).

The respondents who claimed an increase in control cited better management of study time and ability to observe the learning processes of their peers. As learner control is also part of the teaching learning transaction, citing of the process of time management and peer learning processes is consistent with the study by Gaspar et al., (2009) contending that students first validate their self-directed learning skills and then move on to validate their self-directed learning process. As stated above regarding learner initiative and the finding of the Gaspar et al. study that students who modeled faculty demonstrated methods of inquiry increased their scores by three percent, it should be considered that students who experienced no change while at CGSOC either did not witness faculty modeling inquiry methods or misdiagnosed their level of

learner control. Of course it is possible that some other environmental factor caused no change to occur in their level of learner control. This caution applies across all PRO-SDLS subcomponent categories.

Learner Self-efficacy. Respondents' perceptions of their change in learner self-efficacy also did not always match their scores as assessed by the PRO-SDLS. Of the 40 respondents, 20 correctly perceived their change in learner self-efficacy. Fourteen respondents overestimated their change and six underestimated their change. Once again the variance in actual score to perceived change could be accounted for in the introduction of the phrase learner self-efficacy (Toyota, 2015). This is the first time the respondent has seen this term and it comes after both the pretest and posttest surveys have been completed. Unknown is whether this phrase was mentioned during CGSOC.

The associated narratives regarding an increase in learner self-efficacy cited the development of better time management skills, development of reading and comprehension skills, time in the course to reflect on what they had learned, and taking on a significant academic load to include pursuit of a master's degree while at CGSOC. These narrative responses appear to align with both a respondent validation of self-directed learning skills and validation of self-directed learning processes. Twelve respondents; however, experienced a decline in learner self-efficacy. Margolis and McCabe (2006) found that students with already low levels of self-efficacy tend to avoid academics. Avoidance could account for a lack of increase in learner self-efficacy by these 12 respondents. Margolis and McCabe (2006) go on to recommend adult educators employ vicarious experiences and verbal persuasion to strengthen a learner's sense of self-efficacy. In order for this to be implemented in the learning environment, however, instructors would first have to both understand the concept of self-efficacy and the ways to enhance it in their students and understand the level of learner self-efficacy of their students entering their classrooms.

Learner Motivation. Respondent's perceptions of their change in learner motivation did not always match their scores as assessed by the PRO-SDLS. Of the 40 respondents 15 correctly perceived their change in learner motivation. Nineteen respondents overestimated the change and six underestimated their change. This subcategory had the greatest number of respondents misdiagnose their level of learner motivation. This is also the subcategory responsible for the overall decline in total score on the PRO-SDLS. Once again the variance in actual score to

perceived change could be accounted for in the introduction of the phrase learner motivation (Toyota, 2015).

While only five participants credited CGSOC with improving their learner motivation, the narrative responses agreed with the findings by Gammill (2013) that participation in a professional study group increases learner motivation. While not the majority outcome, the narrative responses were consistent with Wlodkowski's (2008) recommendations to adult educators that they establish inclusion, develop a positive attitude, enhance meaning, and engender competence. Inclusion, according to Wlodkowski (2008) can be established through collaborative learning and identified guidelines among other things. To develop a positive attitude requires continual feedback regarding progress and introducing new topics by having learners identify what they know about the topic, what they want to know about the topic, and what they learned about the topic (Wlodkowski, 2008). Meaning can be enhanced through the use of problem based curriculum, simulation and varied experiences (Wlodkowski, 2008). Varying experiences according to Wlodkowski (2008) requires changing methods of instruction, materials used for instruction, and interpersonal learning patterns. Finally, Wlodkowski (2008) advocated instructors engender competence through early clarification of assessment tasks and criteria and continuous feedback.

Some of the narrative comments indicated use of the methods advocated by Wlodkowski (2008). Further study would be required to determine if these recommendations are used by faculty at CGSC or if they should be implemented by faculty at CGSC. One respondent cited the critical nature of his job as a soldier as the reason for his arriving with an already well developed level of learner motivation and could account for a lack of perception in ability to increase. Vance (2013) cited a correlation between heightened levels of learner motivation and military experience and this correlation could be the reason the respondent did not cite CGSOC as responsible for any change in learner motivation. It is also possible that the removal of the soldier from the normal military environment could account for a perceived loss of learner motivation. In the present academic environment the soldier may not perceive a need to be motivated and may in fact experience a perception of loss of learner motivation.

Overall, the differences between actual subcomponent Likert scale scores and narrative responses in each of the subcomponents, for example, having no narrative response indicating a cause for decrease in learner motivation, despite the marked decrease in that subcomponent mean

score change, could indicate that the PRO-SDLS is not well suited to this population. However, numerous validations of the instrument in other studies make this supposition unlikely. It could have been that the subcomponents of the PRO-SDLS are too subtle and the respondents were not fully self-aware. This would be consistent with Toyota's (2015) finding that the introduction of word choice impacted the perception of the respondent and affected their response. The PRO-SDLS does not contain the use of the phrases, learner initiative, learner control, learner self-efficacy, or learner motivation. Neither did the researcher inject definitions into the added questions in the posttest.

Research Question 2

Does a change in the level of self-directed learning correlate to the learner characteristic of gender?

The change in pretest to posttest scores was not significant either in total or by subcategory when analyzed by gender. A simple comparison of the mean scores, however, for motivation by gender would appear to suggest that the CGSOC either sustained or increased both learner initiative and motivation in the female population to a greater degree than it did among the male population. While no significant differences were found between male and female respondents on either total score differences or differences in any of the four subcomponents, the female only scores either remained the same or experienced positive change. Male scores, on the other hand, experienced an increase only in the subcomponents of learner initiative and self-efficacy over the course of CGSOC.

One insight into the difference in gender scores is that the female average score was higher in total and in all subcategories than their male counterparts. The finding by Dynan, et al. (2008) that those who enter with an already heightened level of self-directed learning increase their scores over the period of instruction, whereas those with lower self-directed learning scores languish. Since, however, the narrative responses were not associated with the demographic data it is impossible to make inferences as to probable cause through the use of the narrative responses. It should be considered that the small female sample may not be representative of the larger female student population for this class and that further research could shed light on gender differences in the development of self-directed learning at CGSOC.

Research Question 3

Does a change in the level of self-directed learning correlate to the learner characteristic of race/ethnicity?

A number of findings regarding race/ethnicity were found to be statistically significant but with differing effect sizes. The change in pretest to posttest scores was statistically significant for both the total score change and the change in learner motivation. Additionally, the mean score change among white respondents for the subcomponent of learner motivation was also statistically significant. As with the female to male scores, the average scores of non-white respondents exceeded the average scores of the white respondents in both the pretest and posttest and the differences in averages was greater in the posttest indicating a greater positive change by non-whites at CGSOC. Once again the finding by Dynan et al. (2008) may account for the difference in outcomes by race/ethnicity.

This finding and the previous finding regarding gender are contrary to Hall (2011) who found no significant difference by gender or race/ethnicity. Unfortunately, due to the inability to associate narrative responses and demographic data, no further light can be shed on this outcome; however, the fact that white and non-white had such markedly different outcomes is worthy of further research.

Research Question 4

Does a change in the level of self-directed learning correlate to the learner characteristic of level of education?

The change in pretest to posttest scores was statistically significant when analyzed by level of education for learner control when nonparametric tests were applied; however, the effect size was considered small. While not considered statistically significant the mean score changes for master's degree respondents were greater than that of the bachelor's degree respondents for all evaluated scores except learner motivation. Both bachelor's degree and master's degree respondents experienced a negative change in the subcomponent mean score for learner motivation. While both groups exhibited a decrease in means for learner motivation, those with a master's degree had a greater decrease than those with only a bachelor's degree.

This finding is contrary to Tiffani's (2012) finding of no significance between scores by level of education. While the effect size is small, it is interesting that in all scores except the

posttest learner control score those with a master's degree had a lower average score than their counterparts with a bachelor's degree. Also unknown is whether the respondents indicated on the pretest that they were pursuing a masters during CGSOC or if a potential sub population of bachelor's degree respondents chose after the pretest administration to pursue a master's degree potentially accounting for the bachelor's degree population's higher scores. Once again, however, due to the inability to associate narrative responses and demographic data, no further light can be shed on this outcome and further research is warranted to fully assess the differences in self-directed learning scores by level of education.

Research Question 5

Does a change in the level of self-directed learning correlate to the learner characteristic of branch of the Army?

While none of the differences in scores was statistically significant when compared between branches of the Army, operations branch officers had the highest positive change in learner initiative. By subcomponent score mean changes, operations branch had positive score changes in all subcomponent scores except learner motivation. Operations support, force sustainment, and special staff officers each saw a positive change in two of the subcomponents and a negative change in two of the subcomponents.

Operations branch officers tied with force sustainment officers for improvement in self-efficacy, and had the second highest positive change in total score difference. Operations support branch had the greatest decline in total score as well as in learner control; however, they had the only positive change in learner motivation across the branches. Special staff branch experienced the greatest positive change in total score and learner control, while exhibiting the lowest score change in learner initiative, a subcomponent in which all branches experienced a positive change.

Understanding the previous academic and military experience of the branches could shed light on the differences in outcome. In the case of special staff officers, these officers typically have a field of study unlike their counterparts. Chaplains, lawyers and medical officers all fall into special staff. Recalling the findings of Vance (2013) that military experience is associated with learner motivation, the military experience of special staff offices is unlike that of their

94

counterparts and could account for the differences manifested in this study. Further research; however, is warranted to determine if branch of Army is an independent variable of consequence when assessing the development of self-directed learning within the Army.

Summation of Discussion

Kocaman et al. (2009) found that "SDL does not mean learning in isolation, but rather advocated the use of experts as facilitators and resources" (Kocaman et al., 2009, p. 286). This exploratory study found that every Army officer attending CGSOC experienced some degree of change in one or more of the subcomponent scores of the PRO-SDLS. This would appear to indicate that these Army officers were not unaffected by the time at CGSOC. The narrative responses appeared to indicate that either students felt they arrived with an already established sense of self-directed learning or in fact the curriculum and learning environment aided in their development of self-directed learning. The narrative responses, by subcomponent category, provided further insight into both the teaching learning transaction and the learner characteristic component changes in self-directed learning.

This exploratory study has demonstrated the applicability of the Personal Responsibility Orientation (PRO) model to the Army's learning environment as well as demonstrated that the PRO-SDLS can be used to conduct detailed assessments. The Army's Command and General Staff College (2013) had incorporated the principles of experiential learning into its faculty development and research by Dynan et al. (2008) found that faculty who are concerned with students mastering the subject matter directly correlated to the degree of self-directed learning improvement. Dynan et al. (2008) proposed that faculty should teach students to "(a) ask an appropriate question to guide their inquiry; (b) identify the appropriate resources and tools necessary; (c) use the tools and resources …to satisfactorily answer the initial question; and (d) question the assumptions and ideas that created the question in step (a)" (p. 97).

The study's review of self-directed learning began with Tough (1978) establishing self-directed learning as distinct from teacher directed learning in terms of motivation and outcome. Kasworm (1992); however, cautioned adult educators that the process of teacher directed learning can resemble the process of self-directed learning. Kasworm's caution may be applicable to CGSOC today. Taking heed of the recommendations by Dynan et al. (2008), Kocaman et al. (2009), and Wlodkowski (2008) may help unmask a faculty member's

misperception of teacher directed as self-directed learning if such a misconception is occurring among the faculty at CGSOC.

Implications of this Research for the Army

The 2015 learners take initiative for individual development and look for

feedback from mentors and facilitators accessed through networked link.

The Army Learning Concept for 2015

The findings of this exploratory study could shed light on the current circumstances of Army officers' self-directed learning development at CGSOC. The recommendations of Dynan et al. (2008) could be added to the faculty development course at CGSOC as guidelines for teachers who could use the findings to design learning activities designed to develop self-directed learning. It could be possible that teachers who desire to develop their students' self-directed learning may also reconsider their roles in the classroom. Teachers could consider using their students' assessed self-directed learning scores to tailor instruction to their individual circumstances.

Curriculum developers at CGSOC may consider setting aside time for students to reflect on their needs, create learning plans and motivational plans (Wlodkowski, 2008), set goals for their learning, identify out-of-class learning resources, and provide time to self-evaluate their own learning outcomes (Knowles, 1975). Doing so may fully integrate the student into the learning process and could serve to unmask any misconception on the part of the teacher as to the centrality of the student in the instructional process. In addition to these recommendations, Smedley (2007) further suggested a series of strategies to improve self-directed learning among students. He suggested creating a supportive learning environment and providing constructive feedback. Smedley (2007) also recommended encouraging self-assessments, using self-reflection, and providing opportunities to engage in their own learning processes, as well as developing their own learning goals. Smedley (2007) contended that doing so could better enable learners to survive and thrive in the information age. Thriving in the information age has been directly associated with the Army's desire to make lifelong learning a twenty-first century soldier competency (U.S. Army Training and Doctrine Command, 2011).

Implications for Adult Educators

1. *Adult educators could consider measuring the level of self-direction of students entering into the learning environment in order to afford them an insight into their student's capabilities and provide them a baseline against which to measure success or failure of teaching and curriculum strategies to develop self-directed learners.*

Peterson (2010) defined lifelong learning as learning supported by employers and involving the whole person. Peterson (20101) found that self-directed learning can be fostered by faculty and also provided recommendations to improve curriculum. One of those recommendations was the use of small groups. CGSOC employed small group facilitation as the primary means of conveying curriculum. The lack of findings of significance for change in scores pretest to posttest as measured by the PRO-SDLS could appear to indicate that small group facilitation alone may not be sufficient to foster self-directed learning. Consideration could be given to regular use of the PRO-SDLS to measure student self-directed learning readiness at the beginning of a course of instruction and again at the end and an assessment of the change provided to the student. Informed by the results of the first PRO-SDLS administration adult educators could then decide which of recommendations of Dynan et al. (2008), Kocaman et al. (2009), Smedley (200&) and Wlodkowski (2008) mentioned previously they could employ to develop their students' self-directed learning.

2. *Curriculum developers could consider incorporating the competencies of self-directed learning into their instruction.*

In addition to the employment of assessment strategies to assess self-directed learning, research has indicated that the development of self-directed learning competencies requires instruction in the competencies themselves (Roderick, 2004). Curriculum developers could consider incorporating both the strategies recommended by Brockett and Hiemstra (1991) mentioned earlier in this chapter, and the competencies of self-directed learning identified by Knowles (1975):

1. An understanding of the differences in skills required for self-directed learning as opposed to teacher led instruction;
2. An ability to work collaboratively with peers;
3. An ability to self-diagnose learning needs;
4. An ability to express needs as learning outcomes;

5. An ability to relate to teachers as aides rather than task masters;

6. An ability to identify learning resources;

7. An ability to assess achievement of the learning goal.

Furthermore, incorporating the teaching of self-directed learning competencies into curriculum may enable students to better cope with change in the work environment and the professional demands associated with lifelong learning (Kruse, 2007).

3. ***Adult educators could consider reviewing the PRO model (Brockett & Hiemstra, 1991) for applicability within their organization's learning environment as well as employment of the PRO-SDLS to conduct student assessments against which to gauge the impact of implemented curriculum or instructional changes.***

White (2001) found that lifelong learners participate in small groups not so much to learn something new, but rather to acquire new ways of thinking and perceiving. While CGSOC employed small group facilitation in conjunction with the experiential learning model, the assessed outcomes of the curriculum were not the development of the cognitive abilities of thinking and perceiving but rather the practical learning outcomes, the art and science of warfare. Adult educators should review the PRO model (Brockett & Hiemstra, 1991) for applicability within their organization's teaching learning environment. Adult educators could also consideration employment of the PRO-SDLS to conduct student assessments in order to establish a baseline against which to gauge the impact of implemented changes on the development of self-directed learning and lifelong learning skills. Adult educators could also consider that improvement in self-directed learning as an educational outcome for adults may be considered equal to the traditional educational outcomes currently assessed.

Recommendations for Future Research

The limitations associated with this study provide a starting point for recommendations regarding future research. First and foremost, repeat the study without the unintended consequences of reduced post-test survey period and the inability to link narrative responses with demographic data. The value of adding the narrative and linking them to the respondents by demographics is two-fold. First, it provides a richer understanding of the learning environment and its impact as it is experienced by adult learners. Second, doing so provides anecdotal evidence for or against the impact on changes in self-directed learning among adult learners

during a course of instruction. Additionally, a continued monitoring of the demographics of gender, race/ethnicity, and level of education would greatly inform both the Army and the larger field of adult education, while continued monitoring of branches within the Army would inform overall Army efforts to foster self-directed learning in support of their stated goal of developing lifelong learning as a twenty-first century soldier competency. Finally, consideration should be given to assessing those CGSOC students who attend via distance learning. There is a good degree of literature attesting to the development of self-directed learning skills in a distance learning environment and the Army may provide another venue for researchers.

During the course of this study the Chief of Staff of the Army released an initiatives summary. Among the initiatives was a recommendation to expand the use of longitudinal studies (Chief of Staff of the Army, 2015). A consideration for further research within the Army would be to track officers and enlisted to determine if the Army is developing lifelong learners by fostering the development of self-directed learning over the course of a military career through the full range of training, education, and experience offered to adult learners within the military. Such research could inform future educational resource decisions within the Army. Other government teaching organizations as well as private and public universities should also consider longitudinal studies of their students over their courses of study.

A second recommendation would be to enhance the research design from a single group pretest post-test to a control group design. Such a design could be further expanded into a mixed methods research design where narrative responses could be replaced by interviews. The use of the survey to find students who experienced positive change in scores between pretest and post-test and then interview them may provide a more robust link between a change in self-directed learning and the learning environment over a course of instruction. Brockett and Hiemstra (1991) suggested that the field may be best informed regarding the development of self-directed learning by positive case study research. A mixed methods design allows the researcher to validate a change over the course. The follow-on interview would best inform the efforts of adult education practitioners by highlighting positive case studies. An additional recommendation along these lines would be to track respondents by small group and then interview the faculty members whose students have had the greatest increases in self-directed learning with the intended outcome of developing best practices for adult educators to develop self-directed learning.

A corollary recommendation would be to employ a longitudinal study design using a control group. Brockett and Hiemstra (1991) suggested that telling the student what self-directed learning was and how to achieve it may go far toward increasing self-directed learning among adult learners. While CGSOC employed the practices of small group facilitation, reflection, and problem based curriculum, it did not include instruction to the student on the value of, or methods to increase self-directed learning. In addition to the use of control group research to test the validity and value of telling students how to direct their own learning, control group designs could be used to validate and assess individual recommendations for fostering self-directed learning.

Additionally, recommended changes in both curriculum and faculty methods could be tested prior to implementation across the organization, affording institutions of higher education a significant data point to inform implementing the recommended change. Data from the study may be used to inform resource decisions and could be used to achieve buy-in by adult educators who would then be asked to employ the changes. Finally, research is warranted in the development of a PRO-SDLS for undergraduate and below adult learners.

Summary

This exploratory study sought to examine Army officers attending CGSOC experienced change in self-directed learning and was intended to advance understanding of an organization's lived experience to develop self-directed and lifelong learners. Understanding the experience of these students can lead to the development of programs, enhanced by curriculum and instructor methods, intended to foster the development of self-directed learning and ultimately inculcate the competencies of lifelong learning into a student cohort.

The PRO model appears to have provided a sound theoretical framework from which to understand the Army's learning environment and its impact on the development of self-directed learning. The adult education theory of self-directed learning and the associated recommendations for curriculum and faculty methods to foster self-directed learning provided insight into the academic environment experienced by these Army officers. The PRO-SDLS indicated that changes in self-direction occurred over the course of instruction. The narrative responses provided by students indicated that curriculum and faculty methods can increase a student's perceived level of self-directed learning. The narrative responses; however, also

indicate that instruction methods employed at CGSOC could potentially stymie a student's perceived ability to develop their self-directed learning ability.

In the endeavor to develop self-directed learning the burden of effort placed on adult educators cannot be underestimated. Institutions of higher education should heed the advice of Brockett & Hiemstra (1991) to provide students individual feedback; provide faculty time to coach a student into becoming more self-directed in learning; and provide faculty time to mentor change in their adult learners. The fostering of self-directed learning is more paramount today, given the current adult demand for learning at the point of need, the liberation of the learning environment via the world-wide web, and the need of businesses and government organizations for their employees be lifelong learners.

This exploratory study intended to examine the development of self-directed learning, however, in so doing it shed light and gave voice to students. Their answers should inform their teachers and the greater adult education community and should lead to an ongoing dialogue, augmented by further research, regarding individual learner's ability to change and actual change as a result of entering a learning environment.

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Appendix A - Permission to Use PRO-SDLS

From:	Susan Stockdale
To:	Carlisle, Vincent J CIV USARMY MCCOE (US)
Subject:	Re: Use of PRO-SDLS (UNCLASSIFIED)
Date:	Thursday, April 04, 2013 1:27:34 PM
Attachments:	Scoring A Learning Experience Scale.pdf

A Learning Experience Scale.pdf

Hi,
Here you go. I wonder if the email went originally to Dr. Brockett.

Susan Stockdale, Ph.D.
Associate Dean of Graduate Studies
Associate Professor of Educational Psychology and Middle Grades Education
Kennesaw State University

Email: sstockda@kennesaw.edu Phone: 678-797-2060

From: "Vincent J CIV USARMY MCCOE Carlisle (US)"
<vincent.j.carlisle.civ@mail.mil> To: sstockda@kennesaw.edu
Sent: Thursday, April 4, 2013 2:24:35 PM

Subject: FW: Use of PRO-SDLS (UNCLASSIFIED)

Classification:
UNCLASSIFIED Caveats: NONE

Dear Dr. Stockdale,

I am a Department of the Army Civilian working at Fort Leavenworth, Kansas and a doctoral candidate at Kansas State University, Department of Adult, Occupational and Continuing Education. I have chosen to research the Army's educational approach to determine if there are associated changes in level of self-directed learning.

I intend to conduct a quantitative pretest/posttest study, to assess changes in level of self-directed learning scores for the student attending the U.S. Army's Command and General Staff College. In order to accomplish the study I would like to use the PRO-SDLS. I'm writing to ask for your permission to use the PRO-SDLS

I appreciate your consideration of my using the instrument and am eager to hear back from you on the process necessary to employ the instrument.
My major professor is Dr. Sarah "Jane" Fishback.

Respectfully,
Vince Carlisle

Appendix B - PRO-SDLS Pre test with Demographic Survey

ITEM	Strongly Agree	Agree	Sometimes	Disagree	Strongly Disagree
1. I am confident in my ability to consistently motivate myself.					
2. I frequently do extra work in a class just because I am interested.					
3. I don't see any connection between the work I do for my courses and my personal goals and interests.					
4. If I am not doing as well as I would like in a course, I always independently make the changes necessary for improvement.					
5. I always effectively take responsibility for my own learning.					
6. I often have a problem motivating myself to learn.					
7. I am confident in my ability to independently prioritize my learning goals.					
8. I complete most of my college activities because I WANT to, not because I HAVE to.					
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
9. I would rather take the initiative to learn new things in a course rather than wait for the instructor to foster new learning.					
10. I often use materials I've found on my own to help me in a course.					
11. For most of my classes, I really don't know why I complete the work I do.					
12. I am very convinced I have the ability to take personal control of my learning.					

13. I usually struggle in classes if the professor allows me to set my own timetable for work completion.					
14. Most of the work I do in my courses is personally enjoyable or seems relevant to my reasons for attending college.					
15. Even after a course is over, I continue to spend time learning about the topic.					
16. The primary reason I complete course requirements is to obtain the grade that is expected of me.					
	Strongly Agree	**Agree**	**Neither Agree nor Disagree**	**Disagree**	**Strongly Disagree**
17. I often collect additional information about interesting topics even after the course has ended.					
18. The main reason I do the course activities is to avoid feeling guilty or getting a bad grade.					
19. I am very successful at prioritizing my learning goals.					
20. Most of the activities I complete for my college classes are NOT really personally useful or interesting.					
21. I am really uncertain about my capacity to take primary responsibility for my learning.					
22. I am unsure about my ability to independently find needed outside materials for my courses.					
23. I always effectively organize my study time.					
24. I don't have much confidence in my ability to independently carry out my student plans.					
25. I rely on the instructor to tell me what I need to do in the course to succeed.					

Gender:

{Choose one}

( ) Male

( ) Female

Race/ethnicity

{Choose one}

( ) White non-Hispanic

( ) Black non-Hispanic

( ) Asian non-Hispanic

( ) Other non-Hispanic (includes American Indians, Pacific Islanders, Alaska natives, and "more than one race/ethnicity"

( ) Hispanic

Level of Education

{Choose one}

( ) Bachelors of Art or Science

( ) Master's Degree

( ) Doctoral Degree

Branch of the Army

{Enter text answer}

[ ]

Appendix C - PRO-SDLS Posttest with Questions

ITEM	Strongly Agree	Agree	Sometimes	Disagree	Strongly Disagree
1. I am confident in my ability to consistently motivate myself.					
2. I frequently do extra work in a class just because I am interested.					
3. I don't see any connection between the work I do for my courses and my personal goals and interests.					
4. If I am not doing as well as I would like in a course, I always independently make the changes necessary for improvement.					
5. I always effectively take responsibility for my own learning.					
6. I often have a problem motivating myself to learn.					
7. I am confident in my ability to independently prioritize my learning goals.					
8. I complete most of my college activities because I WANT to, not because I HAVE to.					
	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
9. I would rather take the initiative to learn new things in a course rather than wait for the instructor to foster new learning.					
10. I often use materials I've found on my own to help me in a course.					
11. For most of my classes, I really don't know why I complete the work I do.					
12. I am very convinced I have the ability to take personal control of my learning.					

13. I usually struggle in classes if the professor allows me to set my own timetable for work completion.					
14. Most of the work I do in my courses is personally enjoyable or seems relevant to my reasons for attending college.					
15. Even after a course is over, I continue to spend time learning about the topic.					
16. The primary reason I complete course requirements is to obtain the grade that is expected of me.					
	Strongly Agree	**Agree**	**Neither Agree nor Disagree**	**Disagree**	**Strongly Disagree**
17. I often collect additional information about interesting topics even after the course has ended.					
18. The main reason I do the course activities is to avoid feeling guilty or getting a bad grade.					
19. I am very successful at prioritizing my learning goals.					
20. Most of the activities I complete for my college classes are NOT really personally useful or interesting.					
21. I am really uncertain about my capacity to take primary responsibility for my learning.					
22. I am unsure about my ability to independently find needed outside materials for my courses.					
23. I always effectively organize my study time.					
24. I don't have much confidence in my ability to independently carry out my student plans.					
25. I rely on the instructor to tell me what I need to do in the course to succeed.					

Q1a: If you believe your motivation to learn changed as a result of attending CGSC please describe that change and to what you attribute that change. If not go to Question 1b.

Q1b: If you believe your motivation to learn did not change as a result of attending CGSC describe why you believe it remained unchanged.

Q2a: If you believe your motivation to learn changed as a result of attending CGSC please describe that change and to what you attribute that change. If not go to Question 2b.

Q2b: If you believe your motivation to learn did not change as a result of attending CGSC describe why you believe it remained unchanged.

Q3a: If you believe your motivation to learn changed as a result of attending CGSC please describe that change and to what you attribute that change. If not go to Question 3b.

Q3b: If you believe your motivation to learn did not change as a result of attending CGSC describe why you believe it remained unchanged.

Q4a: If you believe your motivation to learn changed as a result of attending CGSC please describe that change and to what you attribute that change. If not go to Question 4b.

Q4b: If you believe your motivation to learn did not change as a result of attending CGSC describe why you believe it remained unchanged.

Appendix D - Informed Consent

Welcome to the Student Learning Experience Survey.

Thank you for providing your input on this survey, which inquires about students' attitudes and behaviors concerning their role in learning. Your responses are part of a doctoral degree research program and may help to enhance the quality of instruction provided to students by graduate schools and institutions. This survey should take about 10 minutes to complete. NOTE: this research examines the development of a personal role in learning over time. You will be asked to take the survey a second time at the conclusion of ILE.

This survey is anonymous and no identifying information will be collected. Your responses will not be shared with anyone. All responses that relate to or describe identifiable characteristics of individuals will be used only for statistical purposes and will not be disclosed or used in identifiable form for any other purpose.

Participation in the survey is voluntary. We urge you to participate in the survey—your responses and experiences will be invaluable in providing the learner's perspective. There is no penalty, and no loss of benefits, if you refuse to participate.

Should you have any questions or concerns about this study, please contact the University Institutional Review Board (IRB). Contact information is:

Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, KSU, Manhattan, KS 66506, (785) 532-3224.

Dr. Maria Clark, IRB and Human Protections Administrator, Quality Assurance Office, Rm 4521, CGSC, Fort Leavenworth, KS 66027, (913) 684-4759.

The researcher is Vince Carlisle and can be reached at (913) 220-7293.
The survey control number is 14-03-052.

To acknowledge your consent to participate in this survey, click "NEXT."

Appendix E - KSU IRB Approval Letter

KANSAS STATE UNIVERSITY | University Research Compliance Office
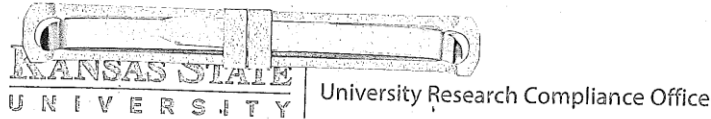
TO: Jane Fishback
Educational Leadership
354 Bluemont

Proposal Number: 6837

FROM: Rick Scheidt, Chair
Committee on Research Involving Human Subjects

DATE: 10/7/13

RE: Approval of Proposal Entitled, "Understanding the Effeccts of Personal Responsibility and Environment on Self-Direction in Learning at CGSC."

The Committee on Research Involving Human Subjects has reviewed your proposal and has granted full approval. This proposal is **approved for <u>one year</u> from the date of this correspondence, pending "continuing review."**

APPROVAL DATE: 10/07/2013

EXPIRATION DATE: 10/07/2014

Several months prior to the expiration date listed, the IRB will solicit information from you for federally mandated **"continuing review"** of the research. Based on the review, the IRB may approve the activity for another year. If continuing IRB approval is <u>not</u> granted, or the IRB fails to perform the continuing review before the expiration date noted above, the project will expire and the activity involving human subjects must be terminated on that date. Consequently, it is critical that you are responsive to the IRB request for information for continuing review if you want your project to continue.

In giving its approval, the Committee has determined that:

☒   There is no more than minimal risk to the subjects.
□   There is greater than minimal risk to the subjects.

This approval applies only to the proposal currently on file as written. Any change or modification affecting human subjects must be approved by the IRB prior to implementation. All approved proposals are subject to continuing review at least annually, which may include the examination of records connected with the project. Announced post-approval monitoring may be performed during the course of this approval period by URCO staff. Injuries, unanticipated problems or adverse events involving risk to subjects or to others must be reported immediately to the Chair of the IRB and / or the URCO.

1863 2013

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129

Appendix F - CGSC IRB Approval Letter

ATZL-SWA-QA   06 May 2013

MEMORANDUM FOR: Vince Carlisle, Kansas State University

SUBJECT: Request for Survey Research: TITLE OF RESEARCH

1. Your request to survey/interview CGSS Students is:

    ☐ Approved

    ■ **Approved with Conditions (see below)**

    ☐ Denied (see below)

2. Your Survey Control Number (SCN) will be issued when the survey has been built and is ready for administration. This survey number must be clearly displayed on the front of your consent form as illustrated below:

    ## This survey has been approved by CGSC Quality Assurance Office and the survey control number is 14-03-052.

3. Conditions:

    a. Survey to be built and administered through CGSC Inquisite System.

    b. Kansas State University provides IRB review and oversight. An approval letter from Kansas State University must be received prior to the conduct of the research.

4. Surveys administered by students of CGSC through the Inquisite System meet **EXEMPT criteria category 2**. No identifying information is collected or available to the investigator.

5. You are required to submit an *End of Project Data Collection Report* to the CGSC Quality Assurance Office when data collection for your project is complete. This report can be found at: http://cgsc.leavenworth.army.mil/QAO/download/End_Of_Data_Collection_Report.doc.

6. Should you have questions concerning the above, please contact Dr. Maria Clark in the CGSC Quality Assurance Office, room 4521 Lewis & Clark.

Maria L Clark, Ph.D.

Human Protections Administrator

IRB Administrator

Survey Control Officer