


Fall 2016

Self-Regulation and Cognitive Load as Mediating Factors for Tailored Interactive Multimedia Instruction

Tammy Ann Bankus
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/teachinglearning_etds

 Part of the [Curriculum and Instruction Commons](#), and the [Instructional Media Design Commons](#)

Recommended Citation

Bankus, Tammy A.. "Self-Regulation and Cognitive Load as Mediating Factors for Tailored Interactive Multimedia Instruction" (2016). Doctor of Philosophy (PhD), dissertation, Educ Curriculum/Instruction, Old Dominion University, DOI: 10.25777/1492-tc87
https://digitalcommons.odu.edu/teachinglearning_etds/5

This Dissertation is brought to you for free and open access by the Teaching & Learning at ODU Digital Commons. It has been accepted for inclusion in Teaching & Learning Theses & Dissertations by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.

SELF-REGULATION AND COGNITIVE LOAD AS
MEDIATING FACTORS FOR TAILORED
INTERACTIVE MULTIMEDIA INSTRUCTION

By

Tammy Ann Bankus
B.A. June 1995, National Louis University
M.S. June 2001, Georgia College & State University
Ed.S. December 2006, University of Georgia
M. Ed. June 2009, University of Georgia

A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

EDUCATION
CURRICULUM & INSTRUCTION

OLD DOMINION UNIVERSITY
November 2016

Approved by:

Thomas Bean (Director)

Helen Crompton (Member)

Brandon Butler (Member)

ABSTRACT

SELF-REGULATION AND COGNITIVE LOAD AS
MEDIATING FACTORS FOR TAILORED
INTERACTIVE MULTIMEDIA INSTRUCTION

Tammy Ann Bankus
Old Dominion University, 2016
Director: Dr. Thomas W. Bean

The primary purpose of this dissertation was to explore whether self-regulation or cognitive load have mediating effects on both learning experiences and learning effectiveness in tailored versus non-tailored interactive multimedia instructional (IMI) training. Although, there is a plethora of literature looking at the impact of cognitive load in IMI (Clark, 2008; Mayer, 2005; Mayer, 2008; Mayer, Griffith, Jurkowitz, & Rothman, 2008; Sweller, 2011) or looking at self-regulation (Pintrich, 2000a, 2000b; Schunk, Meece, & Pintrich, 2012; Zimmerman et al., 2000) separately, there is limited literature that looks at self-regulation and cognitive load in tailored IMI instruction, and even less literature examining these variables within the military population. Participants were soldiers both junior and senior in their military career attending a leadership based course at two different Army installations. Several measures were used to collect data both prior to (MSLQ, demographics, pretest) and after (learning experiences survey, NASA-TLX, posttest) soldiers engaged in the IMI training. Data analysis involved the use of quantitative statistical procedures to test levels of significance, along with the magnitude of relationships between the different variables. Results indicate that individuals who came into the training with self-regulation skills tended to score better on the pretest but by the time they reached the posttest these differences did not appear to have a significant impact on learning. Additionally, self-regulation and cognitive load appeared to have different effects on participants depending on their learning experiences and career experience.

Copyright, 2016, by Tammy Bankus, All Rights Reserved

Dedication

To my parents who taught me how to work hard and never give up; and to my husband who tirelessly supported me, encouraged me when times were hard, and provided a shoulder to lean on.

For my children, Erika, Melissa, Micayla, Haley and Nate, who continue to make this world an amazing place. You are all my inspiration to continue to learn, so that I can be a positive example, as you continue discover your place in life. I am always amazed to see the world through your eager eyes.

ACKNOWLEDGMENTS

There are many people who have contributed to the successful completion of this dissertation. I extend many, many thanks to my committee members for their patience and hours of guidance on the research and editing of this dissertation. The untiring effort of my major advisor Dr. Thomas Bean deserves special recognition. He was always quick to respond, had valuable advice when I was stuck, and provided the motivation I needed to make this dissertation successful. Thank you to Drs. Helen Crompton and Brandon Butler for being on my committee and all of the advice and support you both provided. Thank you to Dr. Thomas (Rhett) Graves for being a great role model and supporting all of my questions throughout this research process. You definitely went above and beyond to help me out. Thank you to all of the soldiers who volunteered to be a part of this research. I am honored to work with such brave men and women every day. Lastly, I would like to thank everyone else who provided a sounding board for me to vent to, as well as bounce ideas off of. To all my fellow colleagues whose effort continues to make the “Army Strong.” This was a long road to travel, but thankfully I had those most dear to me by my side all the way.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	VII
LIST OF TABLES	2
LIST OF FIGURES	4
CHAPTER 1 INTRODUCTION TO THE STUDY.....	5
Introduction.....	5
Background.....	5
Theoretical Framework.....	8
PROBLEM STATEMENT.....	10
RESEARCH QUESTIONS AND HYPOTHESES	11
OPERATIONAL DEFINITIONS.....	13
CHAPTER 2 REVIEW OF THE LITERATURE	14
LITERATURE REVIEW	14
SELF-REGULATION AND MOTIVATION: THEORY AND RESEARCH	14
Self-Regulation and Self-Efficacy	14
Expectancy-Value Theory	17
Phases of the Self-Regulation Process.....	18
Self-Regulation Strategies	22
Measuring Self-Regulation.....	25
COGNITIVE LOAD THEORY AND INSTRUCTION	25
Memory.....	26
Cognitive Load.....	28
Strategies to Reduce Cognitive Load.....	29
TAILORED AND INTERACTIVE LEARNING	32
CONNECTING SELF-REGULATION AND COGNITIVE LOAD.....	35
SUMMARY	37
CHAPTER 3 RESEARCH DESIGN AND METHODOLOGY	38
OVERVIEW	38
METHODS	38
Design	38
Dependent and Independent Variables	39
Independent variable.....	39
Participants.....	39
Materials	40
PROCEDURE.....	41
DATA COLLECTION	43
Data Collection Procedures.....	43
Instrumentation	44

Demographics survey.....	44
Knowledge assessment.	44
Computer based training (CBT) rating questionnaire (learning experiences).	45
NASA task load index (NASA-TLX).....	46
Motivated Strategies for Learning Questionnaire (MSLQ).	48
Course Design.....	50
IMI Development.....	53
Course Modules	54
DESIGN AND ANALYSES	61
SUMMARY	63
CHAPTER 4 RESULTS	64
OVERVIEW	64
Demographics.	64
Hypothesis 1 & 2	67
Hypothesis 3.....	74
Hypothesis 4.....	81
SUMMARY	88
CHAPTER 5 DISCUSSION AND CONCLUSION	89
OVERVIEW	89
Mediating Variables and Instructional Design	89
Career Experience.....	91
Learning Experiences.....	94
Limitations	96
Implications.....	96
Recommendations.....	97
CONCLUSIONS.....	98
REFERENCES	100
APPENDIX A: INFORMED CONSENT	106
APPENDIX B: ACHIEVEMENT TEST A.....	110
APPENDIX C: ACHIEVEMENT TEST B.....	113
APPENDIX D: DEMOGRAPHIC SURVEY FOR NCO SELF-LEARNING IMI.....	120
APPENDIX E: NASA- TASK LOAD INDEX	123
APPENDIX F: MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE (MSQL):MODIFIED	125
APPENDIX G: STORY BOARDS - A LEG UP ON SELF- LEARNING: STRATEGIES FOR SUCCESS: MODULE 1: INTRODUCTION.....	127

APPENDIX H: STORY BOARDS - A LEG UP ON SELF-LEARNING: STRATEGIES FOR SUCCESS: MODULE 2: ATTITUDES & MOTIVATION 141

APPENDIX I: STORY BOARDS - A LEG UP ON SELF- LEARNING: STRATEGIES FOR SUCCESS: MODULE 3: PLANNING AND ANALYSIS STRATEGIES 160

APPENDIX J: STORY BOARDS - A LEG UP ON SELF- LEARNING: STRATEGIES FOR SUCCESS: MODULE 4: INFORMATION SEEKING 183

APPENDIX K: STORY BOARDS - A LEG UP ON SELF- LEARNING: STRATEGIES FOR SUCCESS: MODULE 5: SENSE MAKING STRATEGIES 210

APPENDIX L: VITA..... 223

SELF-REGULATION AND COGNITIVE
LOAD

LIST OF TABLES

Table	Page
Table 1 <i>IMI Design</i>	30
<i>Table 2 Random Assignment Matrix</i>	38
Table 3 <i>A and B Assessment Balance Matrix</i>	45
<i>Table 4 Table Rating Scales Definitions</i>	48
Table 5 <i>Motivational Construct as Relates to MSLQ</i>	49
Table 6 <i>“A Leg Up on Self-Learning” Blueprint</i>	51
Table 7 <i>Software Used in the Development of IMI Courseware</i>	53
Table 8 <i>Analysis Procedure Plan</i>	62
Table 9 <i>Crosstab participants (n) for rank by course</i>	65
Table 10 <i>Crosstabs for participants (n) in rank by education</i>	66
Table 11 <i>Crosstab for participants (n) education by course</i>	66
Table 12 <i>Pretest and Posttest Difference within learner and designer control</i>	68
Table 13 <i>Cognitive processes for self-regulation by IMI type</i>	69
Table 14 <i>NASA- TLX cognitive load by IMI type</i>	70
Table 15 <i>MSLQ by IMI type</i>	71
Table 16 <i>NASA TLX cognitive load demands by IMI type</i>	72
Table 17 <i>NASA TLX cognitive load Importance scales by IMI type</i>	72
Table 18 <i>NASA TLX cognitive load demands by IMI type</i>	73
Table 19 <i>Cognitive processes related to self-regulation by course</i>	75
Table 20 <i>NASA TLX Cognitive load demands by course</i>	76

SELF-REGULATION AND COGNITIVE LOAD

Table 21 <i>Pearson correlations cognitive load demands and cognitive processing related to self-regulation by course</i>	77
Table 22 <i>Learning experience by cognitive processing and cognitive load demands</i>	82
Table 23 <i>Mean quality of learning experiences</i>	83
Table 24 <i>Correlation of learning experience relationships with self-regulation</i>	83
Table 25 <i>Correlation of learning experiences with TLX-overall cognitive load</i>	84
<i>TLX Multi</i>	84
Table 26 <i>Correlation of learning experiences with TLX- cognitive load importance scales</i>	85
Table 27 <i>Correlation of learning experiences with TLX- cognitive load demands scales</i>	86
Table 28 <i>Disparity between the two courses for the relationship between quality of learning experiences and cognitive processes</i>	87
Table 29 <i>Disparity between the two courses for the relationship between quality of learning experiences and cognitive load demands</i>	88

SELF-REGULATION AND COGNITIVE
LOAD

LIST OF FIGURES

Figure	Page
Figure 1. Research Study Data Collection Layout.....	42
Figure 2. Conceptual Framework for Relating Variables that Influence Human Performance and Workload.....	47
Figure 3. Tailored IMI Blueprint for Diagnostic Assessment	53
Figure 4 Lesson Layout	54
Figure 5. Sound Advice for Your Future and Success in the Army.	56
Figure 6. Selecting Your Virtual Mentor.....	57
Figure 7. Self-Learning Attitudes and Motivations Summary.....	58
Figure 8. The Challenge of a Challenge.	60
Figure 9. Differences for physical demands by cognitive processes	78
Figure 10. Differences for time demands by cognitive processes	79
Figure 11. Differences for intrinsic value by cognitive load demands	80
Figure 12. Differences for self-regulation by cognitive load demands	80

CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

The purpose of this chapter is to introduce the theoretical framework, literature review, and problem statement. This study investigated how the characteristics of individual learning experiences are impacted by elements of instructional design, specifically tailored versus non-tailored instructional strategies. The study explored the potential mediating effects of (a) learners' disposition to self-regulate (self-regulation, intrinsic value, cognitive strategy use, self-efficacy) and (b) the level of cognitive load (mental demands, physical demands, time demands, performance/success, effort, frustration) elicited while engaging in the learning experience. A better understanding of this relationship may increase our ability to match students to appropriate instructional content and curricular designs.

Background

Army doctrine supports the notion of adaptation through effective learning experiences, placing an emphasis on the use of technology-mediated instruction that is both innovative and yet maintains a high level of instructional effectiveness (ALC, 2015). Army doctrine also mentions the use of technology to support learning, more specifically distance learning. Distance learning is one of the modes soldiers use to acquire needed knowledge and skills. This is frequently termed *interactive multimedia instruction* (IMI). Although the definition of IMI varies, this study will use the following operational definition: "Interactive multimedia instruction brings mediated instruction from more than one source to bear on an instructional problem which the learner experiences as an integrated (although sometimes complex) medium" (Schwier & Misanchuk, 1993, p.4). Another definition of IMI is "learning from words and

pictures that are intended to foster learning” (Mayer & Moreno, 2002, p. 4). Both of these definitions support the notion that the learners’ experience with IMI involves both self-regulation and cognitive load capacity.

Often, instructional designers create Army distance learning without careful consideration of the soldiers’ level of expertise and ability to self-regulate, which can lead to unnecessarily high cognitive load for the learner. By contrast, tailored IMI designs may both support self-regulation and manage the cognitive load placed on the soldier by assessing the soldiers’ level of expertise and recommending appropriate instructional content. While the results from recent Army research suggest the importance of self-regulation and cognitive load to understanding the effects of tailored IMI designs, these factors have not been directly addressed (Blankenbeckler & Wampler, personal communication, December 2015; Graves, Blankenbeckler, & Wampler, 2014; Blackenbeckler, Graves, Dlubec, & Wampler, 2016; Graves, Blankenbeckler, Wampler, & Roberts, in press).

Self-regulation and cognitive load are important concepts in a tailored learning context. From an educational perspective, self-regulation speaks to metacognition or the ability to plan, monitor, and modify cognition to meet learning needs (Schunk & Zimmerman, 2012). Additionally, self-regulation involves student management and control of the amount of effort they expend, along with the cognitive strategies they use for learning content. Cognitive load refers to the ways in which memory resources impact learning, thereby, the selection and success of learning strategies (Sweller, 2011). In this context, self-regulation and cognitive load impact each other.

Learning involves making meaning (Bruner, 2009). Meaningful learning, as a subset of learning, is learning that achieves a “deep understanding of the material” (Mayer & Moreno,

2003, p. 43). According to Mayer and Moreno (2003), a deep understanding emerges from “attending to important aspects of the presented material, mentally organizing it into a coherent cognitive structure, and integrating it with relevant existing knowledge (p. 43)”. It involves an active process of making meaning through interaction and experience, connecting or modifying new information into existing memory schemas.

Learning taxes learners’ memory resources when learning content contains complex, interacting, and unfamiliar elements (Paas et al., 2003). Through self-regulation, learners can become more aware of the limits to their cognition. Skillful self-regulation can help manage cognitive load. Because self-regulation impacts metacognition along with cognitive strategy choices, the amount of self-regulation expended could have a direct impact on the amount and type of cognitive load the learner experiences in a tailored IMI environment. For instance, poor instructional design, too much irrelevant detail, or too much new information can confuse learners and exhaust their cognitive resources (Mayer & Moreno, 2003). It is therefore important to consider the design of instruction as well as learners’ skills at self-regulation and memory capacities to achieve the best educational outcomes.

Too often, Army training is one-size-fits-all; it targets a generic audience and does not address the needs of individual learners. This one-size-fits-all approach often leads to poorly designed and ineffective training (NCO 2020 Analysis Whitepaper, 2013). To add to the complexity, junior soldiers tend to have limited experience in formal, college-level educational settings, so they may not have developed learning self-regulation and other metacognitive skills. A recent survey of 26,118 NCOs in the pay grade of E5 (sergeants), revealed that the largest portion of those soldiers (73%) had only some college experience, mostly below the Associate’s degree level (NCO 2020 Analysis Whitepaper, 2013). With limited formal college experience,

NCOs are still often required to choose “what” and “how” to learn, requiring them to use self-regulation strategies in their learning process. Their lack of experience could lead them to select suboptimal learning strategies (Ericsson & Charness, 1994). Although IMI instruction can be used to reach a large portion of the population at any time through distributed technology, based on principles of both self-regulation and cognitive load, it is important to provide the right training that meets the needs of the individual at the right time. Variations in past experience, knowledge schemes, and level of expertise mean that different learners will have different learning needs (Ericsson & Charness, 1994).

Previous research on the expectancy-value model of motivation in education, which focuses on self-regulation and cognitive load theory, indicates that a tailored, self-paced learning environment, which could contain a large set of interacting elements, can prevent excessive cognitive load (Blankenbeckler, Graves, & Wampler, 2013, 2014; Wisecarver et al., 2012). Still, self-paced, tailored IMI requires individuals to self-regulate effectively, for example by understanding what needs to be learned, in order to be successful at learning (Graves, Rauchfuss, & Wisecarver, 2012). Although previous research indicates the need to consider both cognitive load and self-regulation, it has not shown what kind of impact the combination of these two variables has on tailored IMI training. This study will address this gap in the existing literature.

Theoretical Framework

In the absence of one overarching unifying theory to explain the role of both self-regulation and cognitive load, two complimentary theories were explored. This study is based on the research covering the theoretical framework within motivation and education, specifically general expectancy-value model of motivation constructs focusing on self-regulation, along with cognitive load theory. Much of the early foundational research that has been conducted

investigating self-regulation, has relied on the general expectancy-value model of motivation (Eccles, 1983; Pintrich, 2000a; Pintrich & De Groot, 1990; Wigfield & Eccles, 2000). When applied to self-regulation, a learner's expectancy for success, along with the value they place on this success will influence motivation, which in turn influences self-regulation. Pintrich and DeGroot (1990) identify three primary points within this framework that are applicable to the ability to self-regulate: expectancy component, value component and affective component. The expectancy component is used to describe how self-efficacy, competence and the attributions related to competency, along with the amount of control the individual thinks they have, will interact to influence one's ability to self-regulate. The emotional reaction (affective component), along with importance and interest a person places in a task (value component) account for the other components within the general expectancy-value model of motivation that comprise self-regulation. To add to this, recent research has explored self-regulation “. . . as proactive processes that students use to acquire academic skill, such as setting goals, selecting and deploying strategies, and self-monitoring one's effectiveness, rather than as a reactive event that happens to students due to impersonal forces” (Zimmerman, 2008, p. 166). Students undergo this process by understanding and defining the task, setting goals to achieve the task, learning and then through adaptation (Winne & Hadwin, 2008).

The learning process is complex and depends heavily on cognitive processes. Although, research attempts to breakdown these cognitive processes (Green & Azevedo, 2009), typically these studies focus on a micro aspect of a larger much more complex system. This complexity is hard to understand conceptually and in turn is not very well defined. When attempts are made to define it, holes and gaps still exist, such as detailed explanations of how different cognitive resources are depleted based on cognitive architecture, leaving more questions than answers.

Cognitive load theory provides the framework which helps to provide instructional design principles based on what is known about human cognitive architecture.

Individuals possess a certain amount of cognitive resources available to use when learning. These resources are expended at a particular rate depending on the type of load induced by the complexity of the learning material (Jones, 2015). Available resources are determined by individual experiences, level of expertise, instructional design, and task complexity. This portion of the framework seeks to explain the impacts of different factors of cognitive load as a mediating variable within this research design.

Problem Statement

It would be useful to know whether cognitive processes related to self-regulation or cognitive load have mediating effects on both learning experiences and learning effectiveness in tailored versus non-tailored IMI training. Although there is a plethora of literature looking at the impact of cognitive load in IMI (Clark, 2008; Mayer, 2005; Mayer, 2008; Mayer, Griffith, Jurkowitz, & Rothman, 2008; Sweller, 2011) or looking at self-regulation (Pintrich, 2000a, 2000b; Schunk, Meece, & Pintrich, 2012; Zimmerman et al., 2000) separately, there is limited literature that looks at these mediating variables in tailored IMI instruction and even less literature examining these variables within the military population. Previous research, indicates that a tailored self-paced environment which could potentially contain a large set of interacting elements can impact cognitive load (Blankenbeckler, et al., 2013, 2014; Wisecarver et al., 2012). In addition, the very nature of self-paced tailored IMI requires an individual to be able to use effective self-regulation strategies, such as an understanding of what needs to be learned, in order to successfully learn (Graves, Rauchfuss, & Wisecarver, 2012). Although previous research indicates the need to consider both cognitive load and self-regulation, it has not shown what kind

of impact the combination of these two mediating variables can have on tailored IMI training. This study will address the gap in the existing literature. The research problem was to investigate the extent to which the mediating variables of cognitive load and self-regulation impact both learning experiences and learning effectiveness for soldiers in a self-paced tailored IMI training environment.

Most of the research conducted in this area has used either children or college students in educational settings (Paas, Renkl, & Sweller, 2004a; Pintrich, 2000a; Pintrich & De Groot, 1990; Van Merrinboer & Sweller, 2005). To date, no research has been conducted looking at how self-regulation and cognitive load affect tailored training in an IMI environment for Army noncommissioned officers (NCOs). It can be argued that this population is considerably different from that of the traditionally used populations, based on experiences and the demands they are frequently exposed to. This research tested the mediating effects of cognitive load and self-regulation on learners' experience in either a tailored training or non-tailored training IMI context. Participating NCOs were assigned to either the treatment condition (tailored training IMI) or the control condition (non-tailored IMI). The treatment group, which had the tailored training, was expected to perform better on measures of self-regulation, cognitive load, and score higher on posttest than the control (non-tailored training design). The treatment group was also expected to self-report more positive learning experiences than those reported by the control group.

Research Questions and Hypotheses

This study was guided by the following research question: Does tailored training design support cognitive processes related to self-regulation? This research question generated the following alternative and null hypotheses:

1. If the tailored training design supports cognitive processes related to self-regulation (increases it), then cognitive load should be reduced compared to the control group.
 - a. If cognitive load is reduced, then both learners' test performance and reported quality of their learning experience should be increased compared to the control group.
2. If the tailored training design does not support cognitive processes related to self-regulation, then cognitive load should be increased compared to the control group.
 - a. If cognitive load is increased, then both learners' test performance and reported quality of their learning experience should be decreased compared to the control group.
3. If tailored training design does not support differences in cognitive processes related to self-regulation and cognitive load demands are not significantly impacted, then military experience differences (rank) could impact these variables.
 - a. If military experience by rank impacts both cognitive processes related to self-regulation and cognitive load demands there should be a significant difference in the relationships between the two groups.
4. If learning experiences are related to cognitive processes and cognitive load demands, then there should be a significant relationship between learning experience ratings on cognitive processes scores and cognitive load demand scores.
 - a. There should be a positive relationship between participants rating their learning experiences higher and increase scores in cognitive processes and cognitive load demands.

Operational Definitions

Cognitive load. Refers to information that must be held in working memory plus the information that must be processed while learning. It involves working memory capacity, along with storage and retrieval processes from long-term memory.

Cognitive load theory. “Cognitive load theory is concerned with techniques for managing working memory load in order to facilitate the changes in long-term memory associated with schema construction and automation” (Paas et al., 2003, p. 3).

Metacognition. Refers to the awareness of the processes involved in one’s own thinking and the ability to control these thinking processes (self-reflection, self-monitoring, self-questioning . . .).

Self-efficacy. One’s beliefs about one’s capability to learn, is one of the biggest influences on SR (Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 2008).

Self-regulation.

Self-regulation is a complex process and includes such activities as attending to and concentrating on instruction, organizing, coding, and rehearsing information to be learned; establishing a productive work environment and using resources effectively; holding positive beliefs about one’s capabilities, the value of learning, the factors influencing learning and the anticipated outcomes of one’s actions; and experiencing pride and satisfaction with one’s goal-directed efforts. (Schunk & Zimmerman, 2012, p. vii).

CHAPTER 2

REVIEW OF THE LITERATURE

Literature Review

This chapter contains a review of existing research literature related to the topic of this study. This review focuses on the concepts of self-regulation (SR) and motivation, as well as on cognitive load theory. The review is divided into three primary sections, as follows: first is a review of research and theory related to self-regulation and motivation; second is a review of literature related to cognitive load theory, particularly as it pertains to instruction; and third is a reflection on the connections between self-regulation and cognitive load as they relate to creating optimal learning environments. A summary concludes the chapter.

Self-Regulation and Motivation: Theory and Research

This section contains a comprehensive description and review of theory and research related to the concept of self-regulation. Motivation and self-efficacy, two closely related concepts, are included in the review. Expectancy-value theory serves as a theoretical framework for understanding the relationships among these ideas.

Self-Regulation and Self-Efficacy

Bandura's (1986, 1997) social cognitive theory is often used to explain SR. Bandura described human interactions as a series of reciprocal events happening between the individuals and other environmental influences. These events impact how one thinks, behaves, and feels in a given situation. Bandura proposed that individuals who strongly believe in their capabilities will display more effort and engagement in learning (Bandura, 1977). From this perspective, SR is viewed as deriving from interest and involves regulating processes involved in cognition, behavior, and affect, while engaging in learning-related goals (Corno, 2008; Lens, 2008; Winne

& Hadwin, 2008; Zimmerman, Boekarts, Pintrich, & Zeidner, 2000; Zimmerman & Schunk, 2008). The main assumptions of this theory are that SR is carried out by the individual, plays a large role in the learning process, is largely personal to the individual, and that SR strategies can be learned.

Effective and appropriate utilization of SR strategies will have a direct impact on successful achievement of learning outcomes (Boekaerts, 1999; Schunk & Zimmerman, 2012). As one gains SR skills, one becomes more autonomous in selecting and using effective SR strategies (Reeve, Ryan, Deci, & Jang, 2007). Becoming autonomous in using SR skills and strategies requires learning, while using complex and dynamic processes related to attention, selection, and monitoring learning engagement. Developing these skills takes time, practice, and knowledge of “what, how, and why” to use different methods in given situations (Deci & Ryan, 2000; Reeve, Deci, & Ryan, 2004; Reeve et al., 2007). The following commonly accepted definition illustrates this complexity:

Self-regulation is a complex process and includes such activities as attending to and concentrating on instruction, organizing, coding, and rehearsing information to be learned; establishing a productive work environment and using resources effectively; holding positive beliefs about one’s capabilities, the value of learning, the factors influencing learning and the anticipated outcomes of one’s actions; and experiencing pride and satisfaction with one’s goal-directed efforts. (Schunk & Zimmerman, 2012, p. vii)

SR goes beyond understanding what a process is to knowing “how” and “when” to apply different methods, such as managing time spent studying or focusing attention to appropriate

sections of learning content (Lens, 2008). SR, therefore, describes how the individual acts upon the self to alter and monitor self-responses.

Self-efficacy, or one's beliefs about one's capability to learn, is one of the biggest influences on SR (Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 2008). Self-efficacy, in turn, arises from ability, attributions, values, goals, expectancies, and volition (effort), among other factors. The learner uses attributions to explain the causes of behavior, thinking, or emotion. The cause to which the learner attributes success or failure has an effect on the learner's self-efficacy. For example, if the learner attributes a success to her or his own efforts, then self-efficacy about personal ability is strengthened. However, if the success is attributed to something outside the learner's control, then the individual's self-efficacy decreases, which can lead to decreased engagement, avoidance behaviors, and other maladaptive responses in similar learning situations (Schunk, 2008).

The value or importance one places on a task also affects SR process and, thereby, influences self-efficacy. The cost (personal sacrifice) that a person is willing to incur to accomplish the task or learning goal determines the task's value. Task value is a function of attainment value (how important it is to the individual), interest value (how much enjoyment the individual gets from doing the task), and utility value (how the task fits what is needed) for future goals (Eccles et al., 1983; Wigfield & Eccles, 2000). Schiefele (1999) suggested that interest and attainment values influence learning strategies, cognitive engagement, and the amount of effort an individual will use to achieve a given task (Schiefele, 1991, 1999; Shell & Husman, 2008; Shell, Murphy, & Bruning, 1989; Wigfield, 1994). The individual manages self-efficacy by not giving in to self-doubt when faced with challenges, along with taking breaks and using varying strategies to engage in complex learning situations. These self-efficacy strategies

effect SR processes, such as task choice, persistence, and level of effort the learner will engage in to accomplish the learning task (Schunk, 2008).

Expectancy-Value Theory

Expectancy-value theory (EVT) compliments SR theories. Eccles (1983) began exploring SR by looking into why adversity impacts people differently. His research built onto the work of Atkinson et al. (1964), and led to the development of EVT (Eccles et al., 1983). Atkinson's model identified developmental and causal reasons for individuals' expectations of success or failure at a given task. This model postulates that individual perception and personal interpretation mediate behavior, in turn influencing both choice to engage in learning and learning outcomes (Atkinson, 1964). Eccles et al. (1983) expanded on these principles, and EVT derives from different motivation-related influences. For example, the researchers examined gender differences in math. They found that although females and males have similar math abilities, by the time females reach high school they are less likely to enroll in advanced math courses. This was due to the expectancies and value differences held by each gender. Females were found to express less competence and place less interest (value) on acquiring higher-level math knowledge (Eccles, Wigfield, & Schiefele, 1998; Roeser, Eccles, & Sameroff, 1998).

EVT focuses primarily on motivation, which consists of expectancies and values. These, in turn, influence SR behaviors. Expectancies are beliefs about how well one will do in the future. Factors that mediate expectancies include attributions, choice, control, task value, effort, and utility. Although values play a large role in EVT, they are only one piece of a more complex puzzle, where ability and other conceptual qualities dynamically impact overall outcomes. Success and failure do not impact expectancies directly; however, the attributions of task outcomes can influence future expectancies (Eccles et al., 1983; Eccles et al., 1998; Wigfield &

Eccles, 2000). Attributions directly affect self-efficacy, as described earlier, and play a role in the perception of task difficulty, along with determining the amount of effort an individual will expend to complete a given learning task (Pintrich & De Groot, 1990; Wigfield & Eccles, 2000). For instance, if one attributes success to one's ability to perform well, then future tasks will carry the same attributions, and the learner is likely to continue to engage in these tasks.

Learners must expend great effort to learn complex tasks. If one deems this effort to be worthwhile based on past learning experiences within the same learning domain, one will believe that success is within one's control, leading one to place a high value on learning the given task (Wigfield & Eccles, 2000; Wigfield, Eccles, & Rodriguez, 1998). Low expectancy and low value do not necessarily lead to task failure; rather, EVT theorists view high expectancy and high value as conditions for optimal learning. The assumption is that, in a situation where expectancies are high, the individual is more likely to engage in effective learning strategies, persist when the task is hard, and attribute success and failure to controllable personal factors, such as study time and ability (Wigfield & Eccles, 2000). Unless one believes in one's capabilities and expects success, one will have little reason to try, persist, and expend the necessary effort to succeed at learning the task (Pintrich & De Groot, 1990).

Phases of the Self-Regulation Process

To explain how SR occurs, Zimmerman (2000) conceptualized the SR process as consisting of before (forethought), during (performance control), and after (self-reflection) phases. Each phase involves special processes with results that can impact the current phase or the previous or succeeding phases of the process. SR motivations constantly influence all of the phases (Zimmerman, 2004).

Some SR processes, such as attribution feedback, occur fluidly throughout all of the phases, whereas others, such as goal development, occur in distinct phases. The processes that occur within all of the phases will impact the specific phase the learner is in at the time. Self-efficacy is one of the fluid processes that impacts all of the phases (Pajares, 2008). Similarly, attribution feedback directly influences the level of self-efficacy an individual experiences when engaged in pursuing complex learning goals. This manifests as feedback, received from peers, instructors, or other environmental sources, that links one's academic outcomes with one's attributions, influencing strategy selection (Ames & Archer, 1988; Schunk, 2008; Winne, 2006; Winne & Hadwin, 1998). Feedback introduces emotion into an individual's engagement with a learning task. For instance, high levels of emotional anxiety can result from receiving negative feedback from peers, which may have a negative impact on one's beliefs about one's ability to perform the learning task. Winne (2006) conducted a study that focused on regulating emotional responses. When students received management training that taught them how to learn from errors they made when studying computer programs, they experienced better performance than those whose training encouraged them to avoid errors. Participants who learned to manage and learn from errors had reduced anxiety and increased self-efficacy (Winne, 2006). The researcher found that emotional state regulation had a mediating effect on task performance. This process can occur at any of the three phases of SR.

According to Zimmerman (2004), in the first phase of SR (forethought), the individual begins to understand or perceive the task. One first identifies what one needs to accomplish. Affective behaviors arise and prior knowledge related to the task comes to the forefront of thought, leading to motivation (Zimmerman, 2004; Zimmerman et al., 2000; Zimmerman & Kitsantas, 1997). Learners' assessments of their prior knowledge will impact the perceived

complexity of the task, the value and personal costs associated with learning the task, and their later attributions in the face of success or failure. Once the individual has developed a sense of the task, the individual frames the task in terms of goals (Pintrich, 2000a, 2003; Pintrich & De Groot, 1990). In this context, a goal is not an overarching aim, but rather a discrete step developed to aid in breaking down the learning task into manageable segments.

Next, the individual enters the enactment phase, taking action toward the goals. People often have multiple goals at the same time, so, during this phase, learners can take several simultaneous actions toward their several goals (Zimmerman, 2004; Zimmerman et al., 2000; Zimmerman & Kitsantas, 1997). A student who is trying to learn a new math equation, for example, might use strategies such as reviewing information, highlighting important steps within the formula, organizing study times, and practicing formulas. All of these strategies require the learner to link prior knowledge to new knowledge, monitor understanding, and assess progress in learning the math equation. If the learner is unfamiliar with the material and has limited prior knowledge, the learning strategies could also include seeking help from peers, which could impact attribution feedback and self-efficacy. In this phase, SR is a constant process of monitoring progress and applying appropriate strategies.

The third phase is where final goal accomplishment occurs. The learner assimilates the various types of feedback received, while evaluating the effectiveness of the strategies used, for the purpose of identifying what the one has accomplished and still needs to accomplish. If the learner has more learning tasks to accomplish, then the SR process starts over with the identification of modified goals. In the last phase, learners evaluate their goal accomplishment and modify their strategies as needed to help accomplish future goals. This is a self-assessment

phase wherein the individual uses metacognitive processes (Zimmerman, 2004; Zimmerman et al., 2000; Zimmerman & Kitsantas, 1997).

Other research compliments and expands on Zimmerman's proposed stages. Winne & Hadwin (1998) propose four phases of self-regulation; defining the task, setting goals to achieve the task, learning, and adaptation. When students enter the forethought phase, this process can be thought of as the time when they engage in defining the task and set goals to achieve those tasks. During the enactment phase, students engage in strategies that aid learning. In the reflection phase, students reflect on their learning progress and adaptation. If more learning needs to occur, the process begins over again. For instance, a study investigating the use of the first two phases of Winne and Hadwin's (2008) proposed processes in college students, examined how self-regulated learning was related to posttest scores. In addition, "students who do not SR their learning while using hypermedia learning environments tend to acquire only factual knowledge and not integrated conceptual understanding" (Green, Hutchinson, Costa, & Crompton, 2012, p. 307). These findings further support the need to encourage self-regulation strategies for deeper learning.

This depiction of the phases of SR helps to illustrate the complexity involved in SR. SR strategy selection occurs during all phases, and forms of self-evaluation occur intermittently throughout the process. Self-evaluation helps with strategy selection. Faulty strategy selection leads to poor goal planning, and possibly failure to achieve the goal altogether or, from an educational perspective, to poor learning effectiveness (Pintrich, 2002; Schunk, 2008; Winne & Hadwin, 1998).

Self-Regulation Strategies

The previous sections focused on the description of SR and the motivations for engaging in SR. This section turns to concrete SR strategies. Effective SR strategies are student practices that bring a greater sense of self-regulated learning; these are the “how” of learning (Pintrich, 2003; Reeve et al., 2004). Both emotional and cognitive SR have been found to be equally important for adaptive transfer (Lens, 2008; Winne & Hadwin, 1998). Early research on how to improve SR focused primarily on individuals engaging in self-monitoring and organizing. In more recent years, research has started to include motivational processes such as expectancies, increasing a sense self-efficacy, values, and self-evaluation strategies (Zimmerman, 2004). McInerney (2008), based on the research of Zimmerman and other motivation theorists, suggested several strategies that aid in SR. These include:

self-evaluating, organizing and transforming (rearranging and restructuring materials), goal setting and planning, seeking information (from nonsocial sources such as a book), keeping records and monitoring, environmental restructuring (rearranging the physical setting to make learning easier), self-consequating (arranging for rewards or punishments for success or failure), rehearsing and memorizing, seeking assistance from peers, teachers, and adults, and reviewing tests, notes, and texts. (p. 375)

Other options include organizing (making ideas orderly), using memory skills like mnemonics, asking self-questions and answer the questions, paraphrasing, elaborating, using analogies, predicting, considering another person’s perspective (McInerney, 2008; Zimmerman, 2004; Zimmerman et al., 2000), include recognizing when difficulties are arising, and asking questions about unknown or confusing materials (Knowles, 1975; Newman, 1994).

Just as students need to understand strategies for increasing cognitive engagement, they also need to learn how to regulate motivational behavior states (Winne & Hadwin, 1998). Winne and Hadwin (1998) devised a system to aid in behavioral SR adaptation by using an “if-then-else” process. “If” represents the task conditions, and “then” represents the process of selecting appropriate operations to solve the task. If these operations are not successful, the “else” condition is activated, whereby the individual selects another set of operations that might be more successful. For instance, “if” the learner experiences anxiety when solving a challenging problem, “then” the individual can engage in positive self-talk strategies, such as reaffirming her or his own ability to solve the problem based on successful similar past experiences. However, if positive self-talk does not reduce the individual’s level of anxiety, the individual engages in an “else” process by selecting another anxiety-reducing strategy, such as getting positive feedback from peers. In this process, metacognition and self-assessment are critical. Knowles (1975) identified the complementary process of self-directed competency, which involves constructing a mental model of the self as a self-directed learner. This occurs through visualizing a plan of action that includes feelings and thoughts about accomplishing the goal. The instructor needs to provide learners with means for assessing themselves as self-directed learners.

Additional cognitive strategies include simple memory tasks, such as recall of information through strategies like rehearsal, or complex tasks that require comprehension, such as elaboration (generative note taking and creating analogies) and organizational strategies (outlining content, highlighting important information) (Pintrich, 1999). Deeper processing strategies include explaining ideas presented in the learning and asking and answering questions (Weinstein & Mayer, 1986). SR strategies to enhance metacognition include planning (setting goals, generating questions), monitoring (setting a goal or criteria against which standards are

measured or comparisons are made; e.g., tracking attention, self-testing, monitoring comprehension), and regulating cognitive activities and behaviors (rereading for comprehension, reviewing material that the individual is weak in, skipping hard questions on a test and returning to them later) (Pintrich, 1999). Students use these strategies to monitor their cognition.

Monitoring can alert the individual of breakdowns where modifications need to occur. Resource management strategies include environmental management strategies (time management, study environment, help-seeking).

Research suggests that individuals who are good at SR set better learning goals, implement more effective learning strategies, expend more effort when needed, and monitor their progress at achieving goals (Bouffard-Bouchard et al., 1991; Zimmerman & Kitsantas, 1997; Zimmerman & Schunk, 2008). Goal setting and motivational planning allow students to control the amount of time they spend engaging in learning strategies like studying (Pintrich, 2000b). However, just as there are effective strategies, there are ineffective strategies like procrastinating (Ferrari, 2001). EVT, with its emphasis on expectancies, explains why some students do not volunteer to ask questions; they want to avoid negative feedback (Eccles & Wigfield, 1985). These ineffective strategies usually develop out of a lack of knowledge about effective strategies, poor expectations, or a sense of low value for completing the learning task. Since learning SR takes time, it can be challenging to teach SR strategies.

The implications of this line of reasoning are that SR processes are critical to learning. Self-efficacy, expectancies, and values are personal to the individual and will impact SR in a self-directed learning environment. The development and appropriate utilization of SR strategies during each phase of SR can lead to the autonomous use and selection of appropriate learning methods.

Measuring Self-Regulation

Based on EVT, in 1990, Pintrich and DeGroot developed the Motivated Strategies for Learning Questionnaire (MSLQ), designed to look at the relationships of motivation, values, and SR. To test the efficacy of this instrument, they conducted a correlation study of over 3,000 middle school and college students. Individuals who scored higher on the scales used metacognitive strategies, such as increased persistence and effort, for tasks that they viewed as tedious. SR, as operationalized by the MSLQ, was able to predict effective strategy use and academic performance, with higher values reported by those who engaged in cognitive strategies and self-regulation. This measure was found to have strong validity and reliability for measuring motivation related to self-efficacy, intrinsic value, cognitive strategy use, and self-regulation. The next section contains a discussion of the importance of cognitive load and cognitive architecture in a self-directed learning situation.

Cognitive Load Theory and Instruction

Cognitive load theory is used to apply what is known about human cognitive architecture to best practices in instructional design (Sweller, 2011). Research on cognitive architecture helps to explain the core processes of memory and how it impacts learning. Cognitive load builds upon existing knowledge about the memory subsystems of working memory (WM) and long-term memory (LTM). In order for learning to occur, learners must maintain information in WM. However, WM is finite, with limitations on both the number and duration of interacting elements. This can pose a challenge for learning. This section contains a discussion of cognitive architecture, especially memory subsystems, as a theoretical framework for cognitive load theory. This section also contains a discussion of the concept of cognitive load as it relates to the purpose of the proposed research.

Memory

The theory of cognitive load derives from existing knowledge about cognitive architecture, specifically memory and learning. Early memory research studies date from the 1950s, when researchers began to study amnesic patients to gain insight into memory processes. Miller (1956) conducted a seminal study in which he established the foundation for the discovery of limited working memory capacity. Memory consists of separate stages or processes. When encoding information into LTM, information initially passes through WM. WM is constrained by both the amount of information held and the duration required for processing. By contrast, LTM is not constrained by either duration or capacity. In order for new learning to occur, information must transfer from WM into the permanent stores of LTM (Miller, 1956).

In 1972, Baddeley conducted research to help identify the components of WM. In his work he identified a verbal memory system. This system involves phonemic coding, which is sensitive to semantic elements. This was an important discovery for learning because it established a clearly definable difference between LTM and WM resources, along with identifying WM processes. Baddeley identified durable memory traces that help connect information into LTM. This furthered learning theory by contributing an understanding of, first, the division and processes that occur in WM, and, second, the dual processing of new information. Researchers now understand that learners process information aurally, through the phonological loop, and visually, through the visuospatial processing centers (Baddeley, 2002). The availability of two processing systems means that the duration and capacity of the two systems work together and compliment the limitations of WM. WM still has both duration and capacity limitations, but, by taking advantage of the two different processing systems, learners can maximize the capacity of their WM.

Unlike WM, LTM has an unlimited storage capacity and does not need to be constantly refreshed. Humans categorize information in LTM based on specific features of that information. These thematic stores of information create schemas (Baddeley, 2002). Schemas are networks of knowledge and facts that provide a way to organize information in memory. Schemas can include patterns, behaviors, and concepts that are related or interrelated and make up a mental framework for memory (Baddeley, 2002). People categorize new information in WM according to existing schemas and transfer it into appropriate LTM for storage (Baddeley, 1972; Baddeley, 2002; Baddeley & Hitch, 1974). Once new information connects to an existing schema in LTM, learning has occurred. From a learning perspective, novices have fewer and shallower schemas into which they can organize new information. Over time and through attaining expertise within the given schema, individuals develop larger, deeper schemas with strong memory traces (Baddeley, 2002). This means that information becomes easier to retrieve and modify through learning, leading to deeper levels of learning.

Once information moves into LTM, it becomes part of an unconscious process until the individual retrieves it into working memory through attention processes. Through the use of schemas, information processing can be automatic, freeing up the limited capacity of WM to organize additional information into more complex systems or schemas. Schemas are domain specific and augment WM capacity to an extent that corresponds to the complexity of the schema (Artino, 2008; van Merriënboer & Ayres, 2005). In this sense, schemas can be viewed of as chunks of domain-specific information (Artino, 2008; Kalyuga, 2007).

LTM uses information in both explicit and implicit processes. Explicit memory is involved in associative memory processes that are either episodic or declarative. It is the information we have available for conscious memory use. Implicit or procedural memory is the

information that is considered to be automatic and largely unconscious (Paas, Renkl, & Sweller, 2003). Riding a bike and driving a car are examples of procedural (implicit) memory. The storage and retrieval of automatic information is termed *automaticity*. Through automaticity, working memory resources are freed up to handle the explicit memory processes needed for learning to occur (Paas et al., 2003).

Cognitive Load

Cognitive load considerations are primarily important when learning complex tasks. Complex tasks require several interacting memory traces, limitations, and processes. Sweller (1988) coined the term *cognitive load* to account for how the limitations of working memory affect learning. To explain memory-processing limitations, cognitive load theory accounts for the inherent difficulty of the material, the learners' prior knowledge, the design of the instruction, and the amount of mental effort the individual exerts to learn the material.

Total cognitive load is the additive combination of intrinsic, extraneous, and germane cognitive load (Sweller, 1988; Sweller, van Merrinboer, & Paas, 1998). Intrinsic cognitive load is personal to the learner and accounts for the level of complexity imposed by the learners' prior knowledge and the material itself. Unnecessary instructional strategies use up limited available working memory resources, leading to extraneous cognitive load (e.g., split attention, redundancy). However, by understanding the material's level of difficulty and the complexity, instructional designers can avoid extraneous cognitive load by using effective design principals. Intrinsic and extraneous cognitive load are additive; when combined, the resources left for processing equal germane cognitive load (Paas et al., 2003). In order for learning to occur, intrinsic, extraneous, and germane cognitive load cannot be greater than what working memory is able to process. If the material is complex, then the intrinsic cognitive load will be high. To

account for the high intrinsic load, extraneous load from instructional design strategies should be minimized (Paas et al., 2003). For example, in the case of split attention, an ineffective strategy is to have students learn a task presented on a computer screen, while at the same time referring to an external manual about the task. To give another example, listening to music while trying to read through a text requires the learner to pay attention to two competing components at the same time, taxing cognitive resources unnecessarily.

In summary, “Cognitive load theory is concerned with techniques for managing working memory load in order to facilitate the changes in long-term memory associated with schema construction and automation” (Paas et al., 2003, p. 3). Intrinsic load is determined by the level of element interactivity inherent in the material (Sweller, 1998). Extraneous cognitive load causes working memory to use resources for irrelevant information processing. Since both intrinsic and extraneous cognitive load are additive, extraneous cognitive load becomes important for minimizing overall cognitive load (Paas et al., 2003). Good instructional design plays an important role in reducing extraneous cognitive load, since the primary cause of high extraneous cognitive load is design that requires split attention or violates the redundancy principle (Yeung, Jin, & Sweller, 1998). Split attention makes it difficult for learners to ignore irrelevant information. Effective instructional design techniques free up cognitive resources in working memory (Chandler & Sweller, 1992; Yeung et al., 1998). Overall, learning performance will degrade if cognitive load is too high, potentially leading to the learner ceasing to learn.

Strategies to Reduce Cognitive Load

Mayer and colleagues (Mayer, 2001, 2005, 2008; Mayer, Deleeuw, & Ayres, 2007; Mayer, Griffith, Jurkowitz, & Rothman, 2008; Mayer & Johnson, 2008; Mayer & Moreno, 2003;

Moreno, 2004; Moreno, 2007, 2010; Moreno & Mayer, 1999) have conducted extensive research into strategies for reducing cognitive load. Table 1 presents a few of their findings.

Table 1

IMI Design Features and their Application

Features	Application
Goal: To Reduce Extraneous Cognitive Processing	
Coherence	Eliminating extraneous words, pictures, images
Signaling	Highlighting important words (e.g., section headings, highlighting, boldface font)
Redundancy	Combining animations with narrations rather than animation, narration and text
Spatial Contiguity	Placing corresponding portions of pictures and words near each other
Temporal Contiguity	Presenting corresponding animation and narration simultaneously rather than successively
Goal: To Manage Essential Cognitive Processing	
Segmenting	Presenting narrated animation in learner-paced segments
Pre-training	Providing pre-training in vocabulary and key concepts (e.g., outlines, key learning objectives, bottom line up front)
Modality	Combining animation (visual) with narration (auditory), not animation (visual) with text (visual)
Guided Activity	Prompting learners to select, organize, and integrate new information
Reflection	Encouraging self-reflection to activate organization and integration of new information
Feedback	Providing learners with proper schemas to repair misconceptions
Worked Examples	Leveraging worked examples to show how to work through tasks/problems step-by-step
Goal: To Encourage Generative Processing	
Personalization	Communicating in an informal/conversational style
Voice	Narrating in a non-accented voice rather than a machine- simulated voice
Pacing	Allowing learners to control their pace, and process smaller chunks of information in working memory
Sequencing	Ordering information to move from old (familiar) information to new (unfamiliar) information
Clear Structure	Using a familiar structure/pattern for presenting information (e.g., compare-contrast, classification, enumeration, cause-effect)

Note: Table adapted from Blankenbeckler et al. (2014), as cited in Graves, Wampler, & Roberts, 2015, p.6.

Brunken, Plass, and Leutner (2004) conducted a study examining the role of irrelevant music incorporated into instructional material. The researchers gave learners an auditory multimedia learning system and a secondary task. The secondary task consisted of irrelevant background music and narration to assess the effects on cognitive load. As predicted, due to the split attention required to learn the tasks, students performed worse when presented with irrelevant music. This finding supports the need to consider design and reduce extraneous variables in learning presentations (Brunken et al., 2004). McCrudden, Schraw, & Hartley (2004) looked at the effects of split attention by approaching learners with two separate types of informational presentations. The first used a whole-sentence approach and the second used a sentence-by-sentence approach with off-screen presentation. The goal was to see which design placed fewer demands on cognitive load. Their results indicated that whole-sentence reading tasks, where the learner did not have to refer to anything else, placed fewer strains on working memory load and allowed for better retention of information. Van Merriënboer and Sluijsman (2009) suggested that instructors can reduce cognitive load by considering the student's level of expertise. For instance, early in the learning process, when intrinsic load is high, learners should study instructions and instructors should implement a scaffolding process. As the learner gains complex schemas through scaffolding and instruction, the instructor can taper off scaffolding and implement worked examples with self-guided explanations. Once the learner begins to reach the level of expert, the development of complex schemas frees up enough working memory resources that learners can then begin to work out problems for themselves. Studies that look at strategies to reduce unnecessary cognitive load help to identify how WM resources can be maximized in learning (van Merriënboer & Sluijsmans, 2009).

While there are methods that work to reduce cognitive load, there are also methods that inherently increase cognitive load and thus have a negative impact on learning. Kirschner, Sweller, and Clark (2006) argued that free exploration of highly complex material puts undue strain on limited WM resources. In addition, they suggested that, in problem solving strategies where an instructor presents a novice learner with a problem and asks the learner to solve it, the learner does not learn anything owing to the amount of resources such tasks impose. A lack of guidance could cause the novice learner to either not learn or learn the wrong material. Based on these findings, the proposed study will employ a tailored instruction design with built-in feedback messages to help scaffold learning.

Tailored and Interactive Learning

Tailored IMI and learner interaction are complimentary principles. To be effective, IMI requires an understanding of interaction and appropriate design principles. In a tailored IMI environment, instructional designers structure the course and its content based on the needs of the learner (Graves et al., 2015). Interaction is the exchange between a learner and something else, such as content. However, there can also be design elements that encourage interaction between the learner and the learner's environment or educational context, as is most often the case in an IMI course (Larson & Lockee, 2014). The interaction in a tailored and interactive IMI learning context consists of using strategies that encourage learning and self-regulation, along with strategies that help to balance cognitive load expectations. In an IMI environment, strategies used to increase interactivity and tailor instruction differ somewhat from those found in a face-to-face environment. In a face-to-face learning environment, where the teacher is able to directly monitor the needs of the learner, it may be easier to provide guidance. However, in a tailored IMI environment, guidance is restricted to the programming and branching options within the IMI

course itself (Graves et al., 2015). In addition, in a traditional face-to-face interaction, feedback may be direct and immediate, whereas, in a typical structured IMI course, where the learner progresses through the content in a step-by-step fashion, the learner may receive delayed feedback or no feedback.

Another important form of interaction involves learner-to-self. This interaction is especially important for fostering self-directed learning and self-regulation strategies. When learners reflect on learning and engage in self-dialogue and personal goal self-assessment strategies, they use metacognition and other important self-regulation skills. As Chastain (1975) notes individualized instruction does not mean learning in isolation. This form of interaction may be especially important in cases where learners have some previous knowledge of the training content. Graves et al. (2014) found that, in an Army context, IMI was more effective among learners with some previous content knowledge. This may be explainable by research on misconceptions, which suggests that passively reading texts is less likely to correct learners' misinformation when compared with interactive learning, where they are able to act on newly corrected information. This study examined basic learning strategies, where learners were likely to have some prior content knowledge from their time in primary and secondary school. Therefore, IMI may be particularly effective for training in these skills.

Although tailored IMI training can range from having simple interactions, such as the ability to self-pace, to complex interaction as in adaptive feature designs, this study focused on a simple design. The design will utilize a diagnostic assessment (further discussed in Chapter 3) along with feedback and recommendations based on the results of the assessment. This methodology adheres to a learner-centric design where instructional designers assess individual learning needs and expect the learner to take an increasing level of responsibility for learning

(Graves et al., 2015). For this reason, a tailored IMI design supports higher levels of learner autonomy. Based on a review of the literature and past similar studies, it is reasonable to expect that both learners' ability to use self-regulation skills and the amount of cognitive load they experience while using this type of methodology can mediate the overall learning effectiveness on a tailored IMI course. This avoids a typical problem with traditional IMI, where the instructional designer expects the learner only to gain a general understanding of the topic without going into needed depth. As noted in previous research, too much interactivity could compromise learning (Graves, et al., 2014). For this reason, it is important to apply effective design principles when designing IMI.

In the U.S. Army, tailored IMI is one proposed method for meeting the needs of the individual soldier while enhancing learning effectiveness. In the past few years, studies looked at how to optimize soldiers' learning needs, for example by developing effective learning strategies and using tailored instruction to meet individual needs (Wisecarver et al., 2012; Graves et al., 2012; Graves, Blankenbeckler, & Wampler, 2014; Blankenbeckler, Graves, & Wampler, 2014; Blankenbeckler et al., 2013). Although these researchers found increased learning effectiveness when using a tailored training method, this finding applied to highly technical skills (adjust indirect fire and conduct a defensive by squad). The researchers did not address learning foundational skills, such as self-learning strategies, for enhancing the soldiers' future success in education and training. The studies proposed using a simplified tailored instruction model, where the soldier receives learning content recommendations based on diagnostic feedback in a self-paced, tailored IMI. These past studies supported the use of this method in the Army context; however, they did not address how the mediating variables of self-regulation and cognitive load can impact the effectiveness of this training and education method.

Connecting Self-Regulation and Cognitive Load

Self-regulation and cognitive load have long been separate concepts in literature and research. However, given the importance of both areas, the combination of these two concepts can lead to greater insight into learning effectiveness, specifically when accounting for self-paced learning environments (Graves et al., 2012). The purpose of this section is to describe how cognitive load can impact SR. Since cognitive load derives from knowledge about cognitive architecture and its impact on learning, and since self-regulation involves monitoring of different cognitive, behavioral, and affective states, it stands to reason that cognitive load theory can complement theories of self-regulation. This section contains an explanation of how these theories relate in the context of learning.

As previously stated, self-regulation involves actively establishing, maintaining, and monitoring goal progress or the mental representation of a desired end state (Zimmerman, 2000, 2004). SR becomes directionless and ineffective without goals (Corno, 2008; Lens, 2008). The process of developing goals involves representing the desired outcome state in working memory. The goals are maintained during all three phases of SR (forethought, performance control, self-reflection) and become mental representations of the circumstances in which the goals can be attained (Zimmerman, 2004). Maintaining these representations in working memory becomes central for self-regulation and all of the variables that affect SR. For instance, distractions could cause SR goals to drift out of WM, thereby affecting attention and the amount of action the individual will engage in toward accomplishing the goals (Ames & Archer, 1988; Schunk, 2008; Winne, 2006; Winne & Hadwin, 1998). From a learning perspective, distraction in instructional design creates extraneous cognitive load and can derail attention required for maintaining self-regulation. However, through the use of effective strategies that incorporate self-regulation

strategies, instructors can support learning and redirect learners toward the achievement of goals (Graves et al, 2014).

Goal monitoring takes place primarily in working memory (Paas et al., 2003). SR strategies used to attain goals, such as outlining or self-questioning, aid in connecting, modifying, or reinforcing memory schemas (Artino, 2008; van Merriënboer & Ayres, 2005). When people retrieve goals from long-term memory and reevaluate them in working memory, they direct their attention toward the achievement of the final goal state, corresponding to the third stage of SR (Zimmerman, 2004). This helps the learner to develop strategies needed to learn the material. If the learner has high learning outcome expectancies and values the learning goals, then the learner will focus attention on learning. Goals help to refocus and refresh working memory duration, while aiding the learner in developing effective learning strategies (Wisecarver et al., 2012). In this sense, both cognitive load and SR strategies work together to aid in learning complex material. There is evidence that high cognitive load early in the learning is associated with the use of fewer SR strategies (DeShon, Brown, & Greenis, 1996; Ferrari, 2001; Van Dillen, Papies, & Hofmann, 2013). In some cases, students fail in open self-paced learning environments, such as hypermedia learning environments, because of cognitive overload and student disorientation (Gerjets, Scheiter, & Schuh 2008). In environments like hypermedia learning environments, students were found to use more cognitive based strategies versus planning and monitoring strategies (Azevedo, 2005), whereas other research found an association in SR strategy use and conceptual understanding (Greene, et. al., 2012). In addition, using SR processes such as planning, monitoring and effective strategy use are associated with the acquisition of mental models for learning complex information about biological systems (Greene & Azevedo, 2009). As students move from novice to expertise in a given domain they

shift their strategy use to accommodate their prior knowledge (Greene & Azevedo, 2009).

However, “research suggests that students do not benefit from the use of computers in classrooms unless they are effective at self-regulating their learning” (Azevedo, 2005, p. 193).

The interacting roles of cognitive load and SR therefore need more careful exploration. Engaging in self-regulation to optimize cognitive load is generally adaptive for cognition, motivation, learning, and performance.

Summary

This chapter presented a review of research and theoretical literature related to the topic of this study. Self-regulation, including the related concept of motivation, and cognitive load are important in understanding how learners attain success. Self-regulation refers to the strategies learners use to motivate and monitor their own learning, and can range from note-taking strategies to time management. Expectancy-value theory sheds light on the reasons learners might choose to develop varying self-regulation strategies, and shows that past learning experience has an important influence on learning outcomes. According to EVT, the ideal learning environment consists of learners who have high expectancy (self-efficacy) and high value for learning. Cognitive load theory, by contrast, emphasizes memory resources to explain that the ideal conditions for learning are those in which the complexity of the material is balanced with the difficulty of learning tasks, leaving sufficient working memory available for processing and transferring knowledge into long-term memory. Despite the fact that both shed considerable light on the ideal conditions for learning, these two concepts have not been studied in combination, and their effects on one another are poorly understood. The following chapter presents the methodology for this study which will address this gap in existing literature.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

Overview

This chapter will cover the methodology used for this study. A discussion is provided about the research design of the study, participants, research questions, data collection procedures, learning content design and development, and independent and dependent variables. The study investigated tailored versus non-tailored interactive multimedia instruction (IMI), along with how characteristics of individual learning experiences are impacted by cognitive processes related to self-regulation and cognitive load variables. Specifically, the research examined the potential mediating effects of (a) learners’ disposition to self-regulate and (b) the level/type of cognitive load elicited during the learning experience. A better understanding of this relationship may increase our ability to match students to appropriate instructional content and designs.


Methods

Design

This research is a true experimental pretest-posttest with a control group design (Gall, 2007). Individuals were randomly assigned to either the treatment or control group. The following is a depiction of this process.

Table 2

Random Assignment Matrix

	Group	Time		
Random Assignment	Group 1	Observation	Treatment (tailored)	Observation
	Group 2	Observation	Control (non-tailored)	Observation

Dependent and Independent Variables

Independent variable. The independent variables for this study represent the two groups: control group (non-tailored IMI) and the treatment group (tailored IMI), along with career experience as determined by course type the soldier was attending at the time of data collection (BLC & ALC).

Dependent variables. The dependent variables were the important constructs identified by this study. These factors were measured using the following instruments:

- a. User demographics survey
- b. The qualities of user experiences as measured with a user experiences survey.
- c. Learning assessment was measured using a pre/post test design.
- d. Perceived cognitive load was measured using the NASA-TLX instrument.
- e. Self-regulation factors were measured using the MSLQ instrument.

Mediating variable. Moderating variables are the variables that stand between the independent and dependent variables, and they mediate the effects of the independent variable on the dependent variable (Baron & Kenny, 1986). In this study, SR and cognitive load are thought to be the mediating variables that can potentially impact the dependent measure results.

Participants

Research indicates that Noncommissioned Officers (NCOs) who are early in their career, are less aware of self-learning strategies and techniques than NCOs further along in their career (Graves, et al., 2011). This study focused on the both the early career (E4) and mid-career (E5/E6) NCOs' experiences to further provide insight for future instructional design methods within this population. The first data collection session took place at Fort Eustis, Virginia with students in the Army's Advanced Leader Course (ALC). Originally, eighty participants were

recruited; however, the experiment was conducted at the end of the day and soldiers had additional duties to complete. Due to these competing challenges and the voluntary nature of the experiment, approximately only 50% ($n=42$) of the recruited sample participated. The second experimental session took place at Fort Benning, Georgia with a sample of soldiers ($n=47$) who all voluntarily participated. These soldiers were attending the Army's Basic Leader course (BLC). The final sample size of eighty-nine soldiers consisted of a combination of participants from these two sessions. The average aggregated age of the participants was 29 ($SD=6.52$) and the average age for BLC was 25 ($SD=4.17$), ALC 32 ($SD=6.93$).

To help ensure that the sample was representative of the population and increase internal validity, random assignment was used to provide participants an equal probability of being selected to either the control or treatment group (Gall, 2007; Keppel & Wickens, 2004). In order to seek the students' consent to participate in the research, the NCOs were gathered in a classroom and the purpose of the research was explained, along with the data collection process for the research effort, and the students' rights as participants in research. Instructors were asked to leave the room while the researcher administered informed consent to avoid unintentional participation pressure from senior NCOs'. The researcher handed out forms describing the research and informed consent. This process helped ensure that students understood their rights as participants in research; how their data will be analyzed, reported, and stored; the limits of the guarantee of confidentiality; and the Institutional Review Board approval that was received. Soldiers were not compensated for their participation in this study.

Materials

The instructional design techniques used for the interactive multimedia instruction (IMI) courseware in this study were based on past findings from previous studies conducted with Army

NCOs' (Blankenbeckler et al., 2013, 2014; Graves, 2014), along with findings from previous research regarding the design of IMI for cognitive load considerations (Moreno, 2004; Moreno, 2007; Moreno & Mayer, 1999; Sweller, 1988a; Sweller, 1988b; Sweller, 2011; Yeung, Jin, & Sweller, 1998). The training content of the IMI was derived from previous research that identified NCOs' preferred strategies and techniques they frequently used to learn on their own (Graves, Rauchfuss, & Wisecarver, 2011). Findings from this early study were used to develop the IMI training entitled "A Leg Up on Self-Learning: Strategies for Success." This content was designed to broadly target new NCOs'. However, this content did not progress past initial development and proof of concept. For the purpose of this research, the overall content was revised to include voice quality sound modifications. In addition, a second form of the content was developed for use with the treatment group. This second set of content allowed for user control and tailored IMI, along with the addition of diagnostic assessment and feedback. This resulted in two forms of the same training content (control and treatment), with different learner controls and branching options. Individuals used a computer to access the content that was on a disk. The course content took approximately two hours to complete. Each participant progressed through initial instructions on how to use the courseware and then begin the lessons. Minimal assistance was provided to the participants as they progress through the courseware.

Procedure

Figure 1 depicts the flow and steps of the procedure used in this study. The procedure followed the steps of pre-course data collection, courseware, and post-course data collection design.

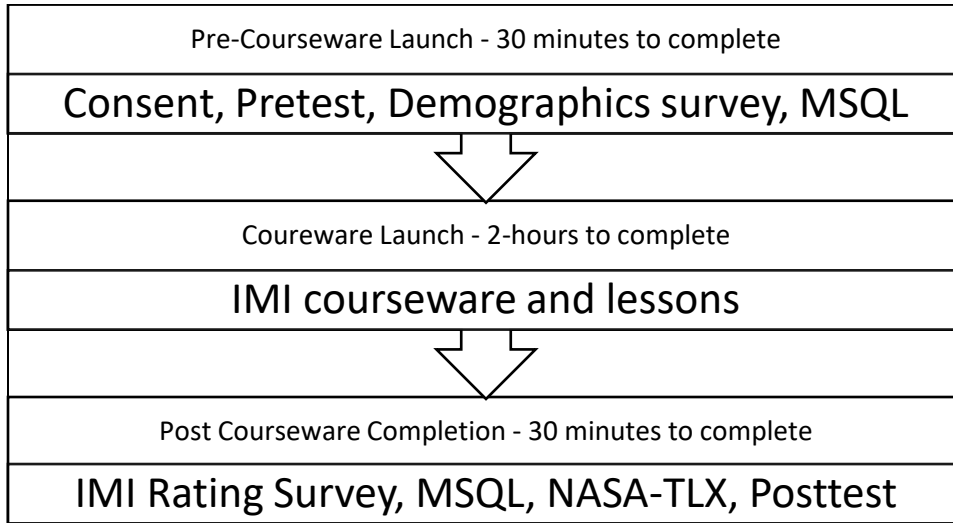


Figure 1. Research Study Data Collection Layout.

To begin with, all of the assessment documents were coded to ensure confidentiality. The courseware did not contain tracking features, so individual choices were not collected. Soldiers were asked to first complete an informed consent document (See Appendix A). Following the completion of the consent form, soldiers were randomly assigned to either the tailored (control) or the non-tailored (treatment) instruction group. In a quiet room, students were given 30-minutes to complete the MSLQ, demographics survey, and the pretest. Once all of the instruments were collected, students were then asked to begin the “A Leg Up on Self-Learning: Strategies for Success” (IMI) courseware.

The IMI content was the same product for both groups. However, the control group progressed through the IMI as programmed from the introduction to the last module “Evaluating Learning.” In contrast, the treatment group (tailored IMI) was first administered a ten question diagnostic assessment (See Appendix B). This assessment was scored automatically and based on the individual score; the soldier was given feedback regarding areas of strengths and weaknesses. This was tailored feedback with recommendations based on the diagnostic score assessment. Individuals in the treatment group were allowed to progress through the content in

any order. Both the control and treatment group took about two-hours to complete the lessons within the course. The courseware contained instructions for navigation and successfully progressing through the lessons. Once soldiers completed the courseware instructions, they then progressed through the lessons. While engaged in completing the lessons, soldiers were not given any additional assistance or instructions, unless needed. At the completion of the lessons, soldiers were asked to complete the CBT rating survey, NASA-TLX, and posttest.

Data Collection

Data Collection Procedures

The data collection instruments included a pre-training knowledge assessment, post-training knowledge assessment, demographic questionnaire, learner experience survey, and measures of cognitive load (NASA-TLX) and self-regulation (MSLQ). Two variations of an IMI training module were presented to the NCOs. Almost half ($n = 45$) of the participating NCOs were presented with an IMI incorporating tailored training features into its design, and the other half ($n = 44$) an IMI that was sequential and did not incorporate tailored training features. Participating NCOs were randomly assigned to one or the other group. Both IMI modules presented the same content, intended to train techniques and strategies that NCOs can use to learn on their own for their Army jobs and to support their professional development. Prior to training, a demographic questionnaire, an assessment of background knowledge (pretest), and measures of learner self-regulation (MSLQ) were administered. The IMI training was then administered. After the training was complete, the post-training knowledge test (posttest), a learning experience questionnaire, and the NASA-TLX were administered. All data was collected and stored in coded envelopes for data coding and analysis purposes. Each participant

had an individualized coded envelop to place all of the materials back into prior to leaving the study.

Instrumentation

Demographics survey. A demographics survey was administered to understand the characteristics of the sample (Appendix C). The survey consists of 25 questions and was coded to maintain individual confidentiality. Characteristics such as rank, age, time in service and grade, military occupational specialty (MOS), and Army component (Regular Army, Army National Guard, Army Reserve) are examples of the demographic data that was collected. Self-perspective questions were asked to determine the individual's self-beliefs and level of self-efficacy prior to taking the course content. Civilian employment history and experience questions were asked to determine prior experience and training that may influence course progress and success. Because the level of education can potentially impact ability to self-regulate, along with prior knowledge and possibly cognitive load, civilian education and history questions were administered. Army related training questions were asked to determine the level of prior training and experiences.

Knowledge assessment. Participants received the same pretest and posttest measurement to help determine posttest gains in knowledge. Participants were asked to answer questions related to the topic of self-directed learning to gauge their background knowledge and experience with the topic. Two versions (A & B) of the test were created, with items consisting of 10 multiple choice questions covering information on attitudes and motivation, planning and analysis, information seeking, sense making, and evaluating learning (Appendices A & B). The following table lists tests A & B assessment balance matrix.

Table 3

A and B Assessment Balance Matrix

Self-Learning Topic	Test A					Correct Responses	Test B					Correct Responses
	1 (1)	2 (1)	3 (2)	4 (3)	5 (3)		6 (1)	7 (2)	8 (3)	9 (3)	10 (3)	
Attitudes & Motivations	1 (1)	2 (1)				2					6 (1) 7 (2)	3
Planning & Analysis			5 (3)	6 (4)		7				5 (3)	8 (3)	6
Information Seeking		3 (2)	4 (3)			5	1 (2)	2 (3)				5
Sense Making					8 (3) 10 (3)	6			4 (3)	10 (3)		6
Evaluating Learning				7 (3)	9 (2)	5		3 (2)			9 (3)	5

**Numbers represent the corresponding questions on the test e.g., Test A question 1 assess knowledge about “Attitudes & Motivations”.*

Computer based training (CBT) rating questionnaire (learning experiences). This questionnaire was designed to assess soldiers’ perceptions about the quality, value, usability, and perceived effectiveness of the training content (Appendix F). Soldiers were asked to rate their level of agreement based on a 5 point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”. The “Strongly Disagree” scale was assigned a point value of 1 all the way up to the

“Strongly Agree” scale being assigned a point value of five. Higher overall scores indicate a stronger level of agreement (Graves, et al., 2015).

NASA task load index (NASA-TLX). At the conclusion of the treatment and prior to taking the posttest, participants were asked to complete the NASA-TLX instrument (Appendix D). This instrument is proven to be sensitive for measuring mental workload (Hart & Staveland, 1988), with strong validity and reliability (Hart & Staveland, 1988; Human Performance Research Group, 1986; Rubio, Díaz, Martín, & Puente, 2004). Originally, it was developed as the result of a multi-year research effort that sought to identify and isolate factors representative of workload. Subjective measures such as this instrument are commonly used for determining subjective cognitive load. However, because subjective measures contain a high degree of variability, the use of rating scales is proposed to help reduce this variability (Hart & Staveland, 1988).

In comparison with other workload assessment methods, subjective ratings may come closest to tapping the essence of mental workload and provide the most generally valid and sensitive indicator. They provide the only source of information about the subjective impact of a task on operators and integrate the effects of many workload contributors (Hart & Staveland, 1986, p. 141).

The framework behind this instrument is based on the premises that workload is human-centered and emerges from the interaction between the task requirements and other circumstances, such as operator perceptions. The following is a depiction of this framework. (Hart & Staveland, 1988)

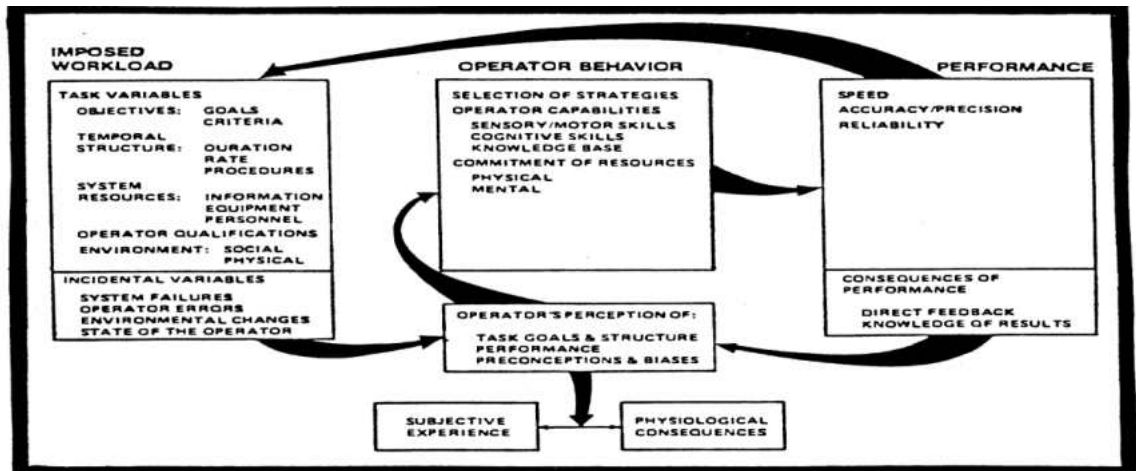


Figure 2. Conceptual Framework for Relating Variables that Influence Human Performance and Workload

The NASA-TLX measures mental workload on six scales (mental demand, physical demand, temporal demand, performance, effort, and frustration level) ranging from low to high ratings. This instrument also provides an alternative scoring method allows each scale to be analyzed based on perceived “demands” and “importance”. It assesses workload on a scale with increments ranging from very low to medium and very high. The TLX Manual provides the following description table for each of the scales (Human Performance Research Group, 1986):

Table 4

Table Rating Scales Definitions

Title	Endpoints	Descriptions
Mental Demand	Low/High	How much mental and perceptual activity was required (e.g., thinking deciding, calculating, remembering looking, searching, etc.)? Was the task easy or demanding, simple or complex, exacting or forgiving?
Physical Demand	Low/High	How much physical activity was required (e.g., pushing, pulling, turning, controlling, activating, etc.)? Was the task easy or demanding, slow or brisk, slack or strenuous, restful or laborious?
Temporal Demand	Low/High	How much time pressure did you feel due to the rate or pace at which the tasks or task elements occurred? Was the pace slow and leisurely or rapid and frantic?
Performance	Good/poor	How successful do you think you were in accomplishing the goals of the task set by the experimenter (or yourself)? Was the pace slow and leisurely or rapid and frantic?
Effort	Low/High	How hard did you have to work (mentally and physically) to accomplish your level of performance?
Frustration Level	Low/High	How insecure, discouraged, irritated, stressed and annoyed versus secure, gratified, content, relaxed and complacent did you feel during the task?

Note: See Appendix A, p.13.

Motivated Strategies for Learning Questionnaire (MSLQ). In 1990, Pintrich and DeGroot developed a modified version of the original Motivated Strategies for Learning Questionnaire (MSLQ) based on expectancy value theory (Eccles, 1983; Wigfield & Eccles, 2000). The framework for this instrument is derived from early work on cognitive motivation and learning strategies (McKeachie, Pintrich, & Lin, 1985). The MSLQ was designed to look at

the relationships of cognitive strategy use, intrinsic values, self-efficacy, test anxiety, and self-regulation. To test out the efficacy of the modified instrument, Pintrich and DeGroot conducted a longitudinal correlation study of over three-thousand middle school and college age individuals. For tasks that were viewed as tedious, individuals who scored higher were found to use metacognitive strategies, such as increased persistence and effort (Pintrich & De Groot, 1990). This measure was found to have strong validity and reliability for measuring motivation related to self-efficacy, intrinsic value, cognitive strategy use, and self-regulation. Soldiers were given a slightly modified version of this instrument, as it pertains to this study. The self-regulation, cognitive strategy use, self-efficacy, and intrinsic value constructs were measured on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree” (Appendix E). The following table lists the question number and the motivational construct in which it falls under when compared to the MSLQ.

Table 5

Motivational Construct as Relates to MSLQ

Motivational Construct	MSLQ Question number and Question
Self-Efficacy	2. Compared with other soldiers taking this course, I expect to do well. 7. I'm certain I can understand the ideas taught in this course. 10. I expect to do very well with this course. 13. I am sure I can do an excellent job on the problems and tasks assigned for this course. 20. My study skills are excellent compared with others in this course. 22. Compared with other students in this course I think I know a great deal about the subject. 23. I know that I will be able to learn the material for this course.
Intrinsic Value	1. I prefer course work that is challenging so I can learn new things. 5. It is important for me to learn what is being taught in this course. 9. I think I will be able to use what I learn in this course in other courses. 18. I think that what I am learning in this course is useful for me to know. 25. Understanding this subject is important to me.

Cognitive Strategy Use	<p>30. When I study, I try to put together information from different sources.</p> <p>33. It is hard for me to determine the main ideas in what I read. (*R)</p> <p>35. When I study, I put important ideas into my own words.</p> <p>36. I try to understand even when something doesn't make sense.</p> <p>38. When preparing for a test I try to remember as many facts as I can.</p> <p>39. When studying, I copy my notes over to help me remember material.</p> <p>42. When I study for a test I practice saying the important facts over and over to myself.</p> <p>44. I use what I have learned in the past to help me learn new material.</p> <p>47. When I am studying a topic, I try to make everything fit together.</p> <p>53. When I read material, I try to say the words over and over to myself to help me remember.</p> <p>54. I develop outlines to help me study.</p> <p>56. When reading, I connect things I am reading about to what I already know.</p>
Self-Regulation	<p>32. I ask myself questions to make sure I know the material I have been studying.</p> <p>34. When work is hard I either give up or study only the easy parts. (*R)</p> <p>40. I work on practice exercises and answer end of chapter questions even when I don't have to.</p> <p>41. Even when study materials are dull and uninteresting, I keep working until I finish.</p> <p>43. Before I begin studying I think about the things I will need to do to learn.</p> <p>45. I often find that I have been reading for class but don't know what it is all about. (*R)</p> <p>46. I find that when the instructor is talking I think of other things and don't really listen to what is being said. (*R)</p> <p>52. When I'm reading I stop once in a while and go over what I have read.</p> <p>55. I work hard to learn even when I don't like the subject matter.</p>

Note: Pintrich & DeGroot, 1990, p. 40

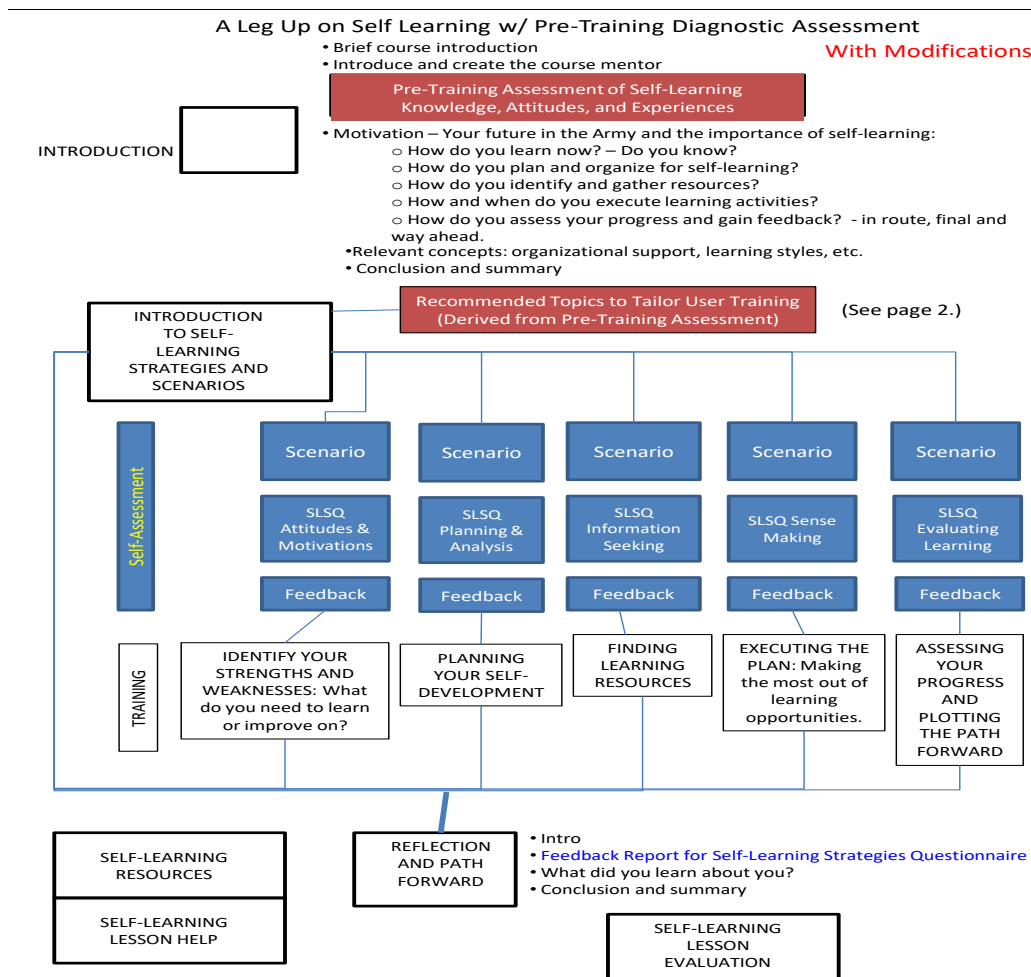
Course Design

The tailored training IMI combines information with a pre-training diagnostic assessment followed by individualized feedback. The individualized feedback includes a report on how well the learner addressed each of the content areas covered by the training and provides them with recommendations on how to optimize their selection of content for their upcoming learning session. The recommendations were designed to aid the learner in understanding how to

prioritize future learning objectives. The following table provides a blueprint for the IMI design used in this study.

Table 6

“A Leg Up on Self-Learning” Blueprint



Based on past research, training using the pre-training diagnostic assessment, along with feedback for learners, was found to have large effects for learners with less prior knowledge; however, as the individual becomes more familiar with the domain, the effect decreases (Graves et al., 2014). Since this concept follows a learner-centered design, the focus is on providing

training that addresses individual needs, while allowing the individual to take responsibility for their own successes (Graves et al., 2015).

The automation schema for the IMI courseware in used in this study was designed to be both structured for the control group and open for self-pacing in the treatment group. To meet this goal, two versions of the IMI were developed: one with individualized feedback, training recommendations, and navigation scheme; the other without the tailored training design features (instructional design features that support learner-control were removed). Both versions of the IMI had the same instructional content with differences between them specific to their design and features. Each lesson was designed around a learning objective and begins with a realistic scenario to gain the participants' attention and orient their thinking toward the learning. The tailored IMI consisted of diagnostic assessment and feedback not found in the non-tailored IMI control group. The following is a blueprint for the navigation features based on the diagnostic assessment for the tailored IMI.

Course: Strategies for Self-Learning

File Name:
Section: Intro to Self-Learning
Page Title: SL_I_012
Version: 0.1

NOTE: This page is the main navigation page to access the modules!

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

Examining Self-Learning Strategies

Select each module with a **RED** indicator to learn more about strategies to support your self-learning. Other modules are optional. After you have examined each of the indicated modules, select **Next** to continue.

Recommended Training Modules

<div style="border: 1px solid black; padding: 5px; writing-mode: vertical-rl; transform: rotate(180deg);"> Numbers in Blue are provided for reference ONLY do NOT display! </div>	1		Determine learning strengths and impediments – How to assess, gain feedback, and identify strengths and weaknesses.	<input type="radio"/>	A
	2		Develop a learning plan – How to analyze your learning needs, develop goals, and create a workable timeline and plan.	<input type="radio"/>	B
	3		Find learning resources and opportunities – How and where to get the right materials and do the right things to learn.	<input type="radio"/>	C
	4		Make sense of your learning – How to make the most out of learning opportunities and make new knowledge and skills useful.	<input type="radio"/>	D
	5		Evaluate learning progress – How to gauge progress, troubleshoot problems, and make adjustments.	<input type="radio"/>	E

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

BLUE numbers are for reference only! Do not display. NEXT go to SL_I_013
 If 1 is selected go to SL_AM_001. If 2 is selected go to SL_PA_001. BACK go to SL_I_011
 If 3 is selected go to SL_IS_001. If 4 is selected go to SL_SM_001.
 If 5 is selected go to SL_EL_001. Provide a visited state; place a ✓ on the blocks selected.
 Do not play narration on revisit. See SL_I_012_A for display programming.

26

Figure 3. Tailored IMI Blueprint for Diagnostic Assessment

IMI Development

To get the necessary design features in the courseware, several different software applications were used. The final products of these applications were combined into the courseware enabling additional features such as realistic human voice narration. The following table lists the software used to develop the two versions of the IMI courseware.

Table 7

Software Used in the Development of IMI Courseware

Software	Purpose
Adobe Flash Builder 4.8 using Flex Framework 4.10	IMI Framework

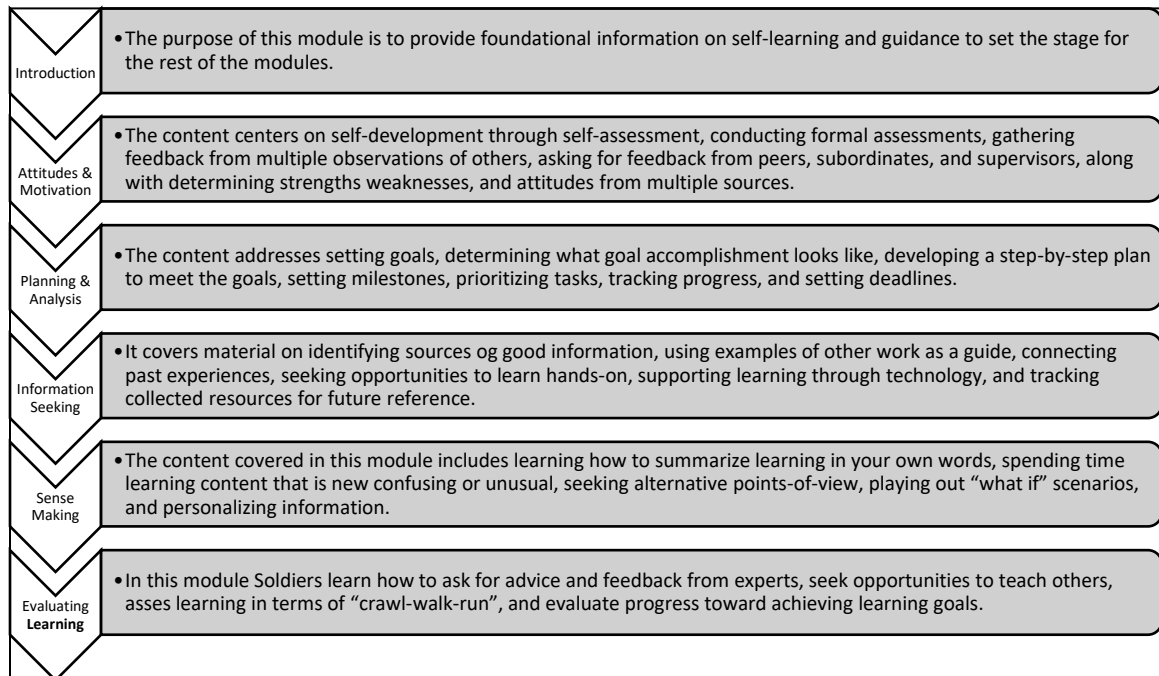
Adobe Flash CS8	IMI pages
Adobe Photoshop CS8	IMI images
Adobe Acrobat Professional	Course documents and interactive survey
Logic Pro	Real voice production
Adobe Audition CS 6	Audio edits

Course Modules

This course is broken out into six modules, each covering a separate learning objective, with sub-content within each module. In order to provide individualized feedback, the diagnostic assessment is used to determine the degree of overall individual level course content and sub-content understanding within each module (See Appendix G-L for complete storyboards). The following is a brief description of the lessons within the course. All storyboard content was received from the research and design work of Blankenbeckler, Graves, Dlubac, and Wampler (2016).

Figure 4

Lesson Layout



Each lesson was designed around a learning objective. The learning objectives were geared toward aiding the learner, in this case the soldier, in understanding how to engage in self-learning strategies. They were written and designed within an Army context, to provide the soldier with realistic and authentic scenarios he/she may encounter in an Army situation. The content is provided in a narration scenario based format. Soldiers are addressed by the IMI as if another NCO is speaking to them and helping them through the lesson. The following is an example (storyboard) of this interaction in the first module of the course:

Course: Strategies for Self-Learning

File Name:
Section: Intro to Self-Learning
Page Title: SL_I_003
Version: 0.1

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

Sound Advice for Your Future and Success in the Army



“... I don’t know anything about the job you’re heading to, but I do know a few things. If you don’t know the job, then learn it. If they can’t tell you what the job is, then you figure it out and then tell **them** what the job is. Don’t wait for someone to teach you. Learn the job and keep learning. Never stop. You never know what you might need to get the mission accomplished.”

“Remember, if it was easy, then they wouldn’t give it to an NCO.” – **Anonymous BN CSM**

Today’s NCO: Adaptive and Continual Learners by First Sergeant (Retired) Cameron Wesson, *NCO Journal*, February 6, 2014

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open with the title and image. At (use live male voice) insert the quote on the screen with the reference to the NCO Journal.

NEXT go to SL_I_004.

BACK go to SL_I_002

3

Figure 5. Sound Advice for Your Future and Success in the Army.

In addition to context specific narration, soldiers were instructed to select a “virtual” mentor to work with from one of three possible options. These mentors stay with the individual throughout the course modules and help to provide a demonstration of a model NCO (See Appendix # for more details). They were also used to provide scaffolding for the learning content. Below is an example of the scripted narration for selecting a “virtual” mentor:

Narration: A key component of self-learning is your support network. Your self-learning network may include supervisors, experienced peers, other senior NCOs, professors, and teachers—anyone who takes an interest in your development and success. No doubt, you have already received advice, guidance, or counseling in your career. A characteristic of our Army is that good leaders are interested and involved in the development, wellbeing, and success of their subordinates. This is especially true when subordinates show initiative and promise as future leaders. To guide you in this lesson, you may select a mentor, a virtual model of a successful

NCO. This virtual mentor will guide you through the scenarios and may intervene at times to provide emphasis or discuss key points in training.

Course: Strategies for Self-Learning

File Name: Intro to Self-Learning

Section: SL_I_008

Page Title: SL_I_008

Version: 0.1

Instructional Designer: SME:


Art Director: Multimedia Developer:

Selecting Your Virtual Mentor

Mouse over the picture of each mentor to read the biography, then select the "My Mentor" button to be guided by this virtual mentor during training.


Select My Mentor

Miller




MSG Lisa Miller

Coats



MSG Will Coats

Deer



SFC Mike Deer

Display the full length mentor image and brief biography in this space.

On Screen Treatments

Mouse-over Miller display, SL_I_008_A (9); mouse-over Coats, display SL_I_008_B (10); mouse-over Deere display SL_I_008_C (11). Select Miller, use MSG Miller as mentor; select Coats, use MSG Coats as mentor; select Deere, use SFC Deere as mentor. When a My Mentor button is selected, advance to SL_I_012. If NEXT is selected make SFC Deere the mentor and advance to SL_I_012. [Mentor image and voice should be consistent through the remainder of training for the secession.](#)

[NEXT go to SL_I_012](#)

[BACK go to SL_I_007](#)

Figure 6. Selecting Your Virtual Mentor.

Narration: The available virtual mentors are depicted. Mouse over the pictures to view a brief biography of each of these senior NCOs. Select the "My Mentor" button adjacent to the senior NCO's picture that seems to be the most appropriate for or compatible with you. If you choose not to select a mentor, select NEXT and a virtual NCO will be assigned to assist you in training.

The course was designed to allow soldiers to first go through a brief lesson introduction. This is where they were guided to select a virtual course mentor. After they chose their mentor, the tailored IMI design required soldiers to take a brief diagnostic assessment and provided recommendations guiding the soldier to additional needed training within the course. The non-tailored (designer controlled) IMI guided the learner to begin the first module in the series. In addition, reflection exercises, resources, and lesson help were also inserted into the course

design. To give a better idea of what the course entailed, the following is a breakdown and example of the second module (see Appendix ...for all of the course storyboards).

Module 2, “Attitude and Motivations.” This module was broken down into twenty-five storyboards. The content centers on self-development through self-assessment, conducting formal assessments, gathering feedback from multiple observations of others, asking for feedback from peers, subordinates, and supervisors, along with determining strengths, weaknesses, and attitudes from multiple sources. Below is a summary slide for the module.

<p>Course: Strategies for Self-Learning</p> <p>File Name:</p> <p>Section: Attitudes & Motivations Toward Self-Learning</p> <p>Page Title: SL_AM_025</p> <p>Version: 0.2</p>	<p>Instructional Designer:</p> <p>SME:</p> <p>Art Director:</p> <p>Multimedia Developer:</p>
---	--

Self-Learning Attitudes and Motivations Summary

To properly prepare for self development and self-learning you must assess where you are. An important aspect of that determination is identifying your strengths and weaknesses. This assessment should include:

1. Self-assessment. Determine your attitudes toward learning and your strengths and weaknesses from your perspective. Understand that it is difficult to honestly self-assess and your opinion may be prejudiced.
2. Conduct a formal assessment. Review records of performance assessments, skill assessments, aptitude and intelligence tests, and other assessments and inventories that compare you to a standard.
3. Gather feedback from multiple observations of others. Detect trends from how they interact with you and act toward you.
4. Ask for feedback from subordinates, peers, and supervisors. Detect trends.
5. Determine your strengths , weaknesses, and attitudes from multiple sources to provide input to your self development and self-learning plans.

Self Assessment Job Aid

Select NEXT to continue or BACK to return to the instructional menu for this module.

<p>On Screen Treatments</p> <p>NEXT goes to the Intro Module Selection Menu SL_I_??</p>	<p>NEXT go to S_SL_I_0??</p> <p>BACK go to SL_AM_006</p>
--	--

Figure 7. Self-Learning Attitudes and Motivations Summary.

It begins with an authentic scenario based on what a junior level NCO would encounter on the job. For example:

Narration:

SFC Ivy: SGT Golden, I have some good news and some bad news, which do you want a first?

SGT Golden: Just give it to me straight, Sergeant Ivy.

SFC Ivy: Okay. The First Sergeant was just alerted that your squad leader, Staff Sergeant Black, is being reassigned to the Old Guard. He will be clearing within a week. Your squad has been tops in the Company, maybe the Battalion. You are junior, but you have played a **major role** in that good performance. (Pause) You have demonstrated a lot of potential. The Platoon Leader and I thought that we'd just move you up, but the First Sergeant says that there are two more E (say the letter "e") fives in the Company who deserve a chance: Marsh in 3rd Platoon and Wilson in 2nd Platoon.

SGT Golden: (in a frustrated tone) Come on, Sergeant Ivy; isn't Wilson the guy from 2nd Platoon who is always checking out early? Doesn't he have kids who are always getting sick at school or his wife isn't supposed to drive or something?

SFC Ivy: At ease, SGT Golden! Being critical of others won't help your case. The First Sergeant has made up his mind and convinced the Company Commander. He plans to pick the N-C-O who demonstrates that he is ready to go to the Advanced Leaders Course. If there is a tie, he wants to conduct a company board and rate the competitors. Your best course of action is to quit complaining and get the prerequisites for A-L-C knocked out ASAP. Don't you want be the First Squad Leader? Get your head right, Sergeant.

SGT Golden: Okay, Sergeant Ivy. Sorry that I popped off. Seems like the days aren't long enough sometimes.

SFC Ivy: Yeah, tell me about it. Listen, suck it up, young Sergeant; make it happen.

MENTOR: Think about how you would react and your motivation in a similar situation.

Sergeant Golden certainly let his attitude show. Sergeant Ivy cut him some slack, but the bottom line is that if he wants to be a squad leader, he has some prerequisites to complete. He also has some skills and knowledge to polish if it comes to a board. Attitude and motivation are key aspects of self-learning. So are understanding your learning strengths and weaknesses. Think about your own development. Do you know what your strengths and weaknesses are? Do you know how to assess them? When you are confronted with a new learning challenge, how do you react? What attitudes do you express? Put yourself in this situation.

Course: Strategies for Self-Learning

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_002,
Version: 0.2

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

The Challenge of a Challenge



Navigation: Advance to SL_AM_003 when the narration is complete.
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Stills of an SFC addressing a subordinate NCO., trade out as narration continues

No NEXT. Go to SL_AM_003 at the end of the conversation.
BACK go to SL_AM_001

2

Figure 8. The Challenge of a Challenge.

The training then walks the soldier through methods for examining attitudes, strengths, and weaknesses. Soldiers are given guidance on conducting self-assessments and using multiple sources for feedback in order to form a self-development learning strategy. Similar strategies were used in the rest of the course modules.

Design and Analyses

This research was a true experimental-between subjects design, with two groups (control and treatment). To examine the research questions, an Analysis of Variance (one-way ANOVA) was conducted to determine if there was a significant difference on the dependent variable measures by either the tailored or non-tailored IMI designs. Because the purpose of this research was to assess if mean differences exist on the dependent variables between, given independent variables with two or more discrete groups, a one-way ANOVA was determined to be an appropriate statistical analysis procedure. Significance level was set at $p < 0.05$ for all ANOVAs in order to reduce the probability of making a Type I error. This helps to reduce the probably of determining there is a difference between the two groups when there is in fact no difference. Also, since large groups were broken out into smaller groups for a portion of this analysis, the sample size was decreased for each cell during those analysis procedures. To avoid an issue of insufficient power to test the hypothesis the alpha level was set at the 0.05 level.

The results of the factorial ANOVA will be presented in the form of main effects and the interactions among study variables. When a significant interaction was observed, additional post-hoc analyses were conducted consisting of a series of independent *t*-tests. The Bonferroni technique was used to adjust for experiment wise error rates. The assumptions of homogeneity of variance were assessed using the Levene's test. In some cases further analysis using a multivariate analysis of variance (MANOVA) was required to assess if mean differences exist. This was the case when the analysis was assessing if mean differences exist on more than one continuous dependent variable by one or more discrete independent variables. This helped to identify whether differences among groups on a combination of the dependent measures were likely to have occurred by chance. A portion of the research also required the use of a Multivariate Analysis of Covariance (MANCOVA). This procedure looks at the mean differences among groups on a combination of dependent variables

and determines the likelihood that those differences occurred by chance, while controlling for the effects of one or more covariates. The MANCOVA was used to control for cognitive processes related to self-regulation and cognitive load demands as the covariates. Lastly, relationships between independent and dependent variables were tested using a Pearson product-moment r correlation. This is a bivariate measure was used to help determine the strength of the association between the variables being tested. The following Table 8 depicts what analysis procedures were planned to answer the questions.

Table 8 *Analysis Procedure Plan*

Variables	Analysis Procedure Plan
<p>Does tailored training support cognitive processes and thereby reduce cognitive load versus non-tailored training? If the tailored training design does not support cognitive processes then cognitive load should be increased when compared to non-tailored training.</p>	<p>One-way analysis of variance (ANOVA) to compare overall pretest to posttest score differences.</p> <p>A 2 x 4 (two levels of IMI type by four levels of cognitive processing) multivariate analysis of variance (MANOVA)</p> <p>2 x 6 (two levels of IMI type by six levels of cognitive load demands) multivariate analysis of variance (MANOVA), with IMI type as the between subjects factor and the NASA TLX overall mean cognitive load scales as the dependent variables.</p> <p>To rule out the effects of cognitive processes related to self-regulation from pretest to posttest, <i>a priori</i> repeated measures analysis of covariance (MANCOVA) was conducted with IMI type as the fixed factor and the MSLQ scales as the dependent variables.</p> <p><i>A priori</i> repeated measures analysis of covariance (MANCOVA) was conducted with IMI type as the fixed factor and the NASA TLX cognitive load scales as the dependent variables.</p>
<p>Are there experience differences between the two groups sampled?</p>	<p>One-way analysis of variance (ANOVA)</p>
<p>IF there is a significant experience difference THEN test for differences between cognitive processes related to self-regulation and cognitive load demands with individual</p>	<p>2 x 4 (two levels of IMI type by four levels of cognitive processing) multivariate analysis of variance (MANOVA)</p> <p>2 x 6 (two levels of IMI type by six levels of cognitive load demands) multivariate analysis of variance (MANOVA)</p>

<p>learning experience ratings.</p>	<p>IF significant then data was split between the two groups and a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between two variables for cognitive processing scores and cognitive load demand scores by participants in the two courses</p>
<p>What is the relationship of quality learning experiences as they are related to cognitive processes and cognitive load demands?</p>	<p>2 x 6 (two levels of course by six levels of quality for learning experience as the dependent variables) multivariate analysis of variance (MANOVA) was performed.</p> <p>Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between two variables (cognitive processes related to self-regulation and quality of learning experiences).</p> <p>Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between the cognitive load demands and mean quality of learning experiences.</p> <p>Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between the cognitive load importance scales and mean quality of learning experiences.</p>

Summary

This chapter discussed the process and procedures used to conduct this study. The study followed a true experimental design, with identified independent, dependent, and mediating variables reviewed. Soldiers participated in one of two experimental sessions and were randomly assigned to either a treatment or control group. The study flowed from pre-course data collection of dependent variables (pretest, demographics, MSLQ), to administering the courseware, and then to the posttest data collection of the dependent variables (posttest, learning experiences survey, NASA-TLX instrument). The course “blueprint” lays out the overall course design that was followed. The next chapter will further explore the data analysis process to include methods of analysis and results.

CHAPTER 4 RESULTS

Overview

This chapter presents the results of the analysis used to evaluate the mediating variables of cognitive processes related to self-regulation as measured by scales on the Motivated Strategies for Learning Questionnaire (MSLQ; self-regulation, cognitive strategy use, self-efficacy, intrinsic value) and cognitive load demands as measured by scales on the NASA Task Load Index (NASA-TLX; mental demands, physical demands, time demands, performance/success, effort, frustration) in tailored (learner controlled) versus designer controlled IMI. For all tests the alpha level was set at $p = 0.05$.

Demographics.

The first data collection session took place at Fort Eustis, Virginia with students in the Army's Advanced Leader Course (ALC). Originally, eighty participants were recruited, however the experiment was conducted at the end of the day and soldiers had additional duties to complete. Due to these competing challenges and the voluntary nature of the experiment, approximately only 50% ($n=42$) of the recruited sample participated. The second experimental session took place at Fort Benning, Georgia with a sample of soldiers ($n=47$) who all voluntarily participated. These soldiers were attending the Army's Basic Leader course (BLC). The final sample size of eighty-nine soldiers consisted of a combination of participants from these two sessions. The average aggregated age of the participants was 29 ($SD=6.52$) and the average age for BLC was 25 ($SD=4.17$), ALC 32 ($SD=6.93$). A one-way factorial analysis of variance (ANOVA) was conducted to determine if there was a significant difference in ages between the two data collection locations. Results indicate a significant difference for age between the two groups, $F(1,87) = 30.52, p=0.001$.

These two courses represent two different levels of career development for an NCO. The BLC course is the first and most junior course an NCO attends, typically after about 4-years of Army service. ALC is the next step up in an NCOs career with participants reaching approximately 8-years in their career. Given the difference between career times, it is reasonable to expect differences in the average experience between the two samples. Both a non-parametric crosstab and an ANOVA were calculated to indicate the composition of each rank within the two courses, along with significance (Table 9). As expected, results indicate a significant difference for rank between the two courses, $F(1,87) = 256.13, p = 0.001$.

Table 9 *Crosstab participants (n) for rank by course*

	<u>SPC/CPL</u>	<u>SGT</u>	<u>SSG</u>	<u>Total</u>
BLC	44	3	0	47
ALC	0	29	13	42
Total	44	32	13	89

Next, since the purpose of this research is centered around cognitive processes related to self-regulation and cognitive load demands, it is reasonable to assume that the amount of education a participant has achieved may influence the types of cognitive processing strategies used, along with the amount of cognitive loads demands experienced. Descriptive statistics were run on the average level of education for the sample. Participants were broken out by rank and nonparametric statistics using crosstabs were run to determine the level of education based on rank. To do this, educational attainment was coded by aggregating the total responses into three possible categories (high school/GED, some college, Associates degree and above) and then splitting those categories out to run the crosstab for rank. Table 10 displays the number of participants who attained each level of education. Based on observations, there appears to be an

equal split between those with some college and those who have attained at least an Associate’s degree, with a marginal percent of the sample attaining a high school diploma only.

Table 10 *Crosstabs for participants (n) in rank by education*

Rank	High School/GED	Some College	Associates and Above	Total
SPC/CPL	9	19	16	44
SGT	3	21	8	32
SSG	0	5	8	13
Total	12	45	32	89

Next, given the significant difference for rank/career achievement for soldiers in each course, another non-parametric crosstab, along with an ANOVA was conducted to indicate how education was represented between the two courses. If there were significant differences in educational attainment between the two samples, this could potentially be a confounding variable that could impact not only the pretest and posttest scores, but potentially all of the dependent variables used in this experiment to measure the influence of IMI design on learning (Table 11). Although there are significant differences for rank between the two courses, results did not indicate a significant difference for soldiers and educational attainment, $F(1,87) = 0.24, p = 0.62$.

Table 11 *Crosstab for participants (n) education by course*

	High School/GED	Some College	Associates and Above	Total
BLC	9	20	18	47
ALC	3	25	14	42
Total	12	45	32	89

Given that self-efficacy has a large influence on self-regulation (Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 2008), to get an idea of the participants overall level of self-efficacy prior to the training, participants were asked to answer a self-assessment question comparing themselves with their peers and to rate whether they felt they are “ahead”, “with”, or

“behind” their peers. Answers were then coded and descriptive statistics calculated. On average, this sample self-reported being “ahead” of their peers (60%) higher than “with” (34%) or “behind” (6%). This indicates that the sample had a high level of self-efficacy going into the training. However, significant differences were not indicated, $F(1,86) = 2.74, p = 0.10$, for self-efficacy scores between the two courses. Significant results were also not indicated, $F(2,85) = 2.18, p = 0.12$, for self-efficacy scores between ranks or educational attainment, $F(2,85) = 2.13, p = 0.13$. Because rank was the only significantly different variable between the two courses, it is reasonable to assume that the cognitive processing and cognitive load demands variables can be isolated as potentially mediating factors for learning.

Hypothesis 1 & 2

This section will further discuss data collection results as it pertains to the hypothesis.

- (1) If the tailored training design (learner controlled) supports cognitive processes related to self-regulation (increases it), then cognitive load should be reduced compared to the control group (designer controlled).
 - a. If cognitive load is reduced, then both learners’ test performance and reported quality of their learning experience should be increased compared to the control group.
- (2) If the tailored training design does not support cognitive processes related to self-regulation, then cognitive load should be increased compared to the control group.
 - a. If cognitive load is increased, then both learners’ test performance and reported quality of their learning experience should be decreased compared to the control group.

Table 11 presents the means and standard deviations for scores on the pretest and posttest differences within learner and designer controlled IMI types (Table 12). Significant results were found for overall pretest to posttest gains, $F(1,82)=3.99, p = 0.05$.

Table 12 *Pretest and Posttest Difference within learner and designer control*

	IMI Type	<i>M</i>	<i>SD</i>	<i>n</i>
Pretest Total	Learner Controlled	3	2.59	4
		.76		5
	Designer Controlled	4	2.45	4
		.11		4
	Total	3	2.51	8
		.93		9
Posttest Total	Learner Controlled	5	3.01	4
		.30		3
	Designer Controlled	5	2.64	4
		.98		1
	Total	5	2.84	8
		.63		4

A repeated measures (two levels of IMI type and two levels of test) multivariate analysis of variance (MANOVA) was conducted to test for significance with IMI type as the between subjects factor and pretest and posttest scores as the dependent variables. Results failed to support differences between the two groups pretest, $F(1, 87) = .45, p = 0.51$, and posttest, $F(1, 82) = 1.18, p = 0.28$, however there were observable improvements based on mean score differences.

Next, an analysis was conducted to determine whether the two IMI types made a difference in terms of eliciting cognitive processes related to several dependent variables (self-regulation, self-efficacy, cognitive strategy use, and intrinsic value). The most appropriate analysis approach to test this hypothesis is to use a 2 x 4 (two levels of IMI type by four levels of cognitive processing) multivariate analysis of variance (MANOVA), with IMI type as the

between subjects factor and the cognitive processes as the dependent variables. Table 13 presents the means and standard deviations for scores on the dependent variables by IMI type.

Table 13 *Cognitive processes for self-regulation by IMI type*

	IMI_Type	<i>M</i>	<i>SD</i>	<i>n</i>
Self - Regulation	Learner Controlled	3.55	.50	45
	Designer Controlled	3.68	.57	44
	Total	3.62	.54	89
Cognitive Strategy	Learner Controlled	3.75	.61	45
	Designer Controlled	3.90	.49	44
	Total	3.82	.56	89
Self-Efficacy	Learner Controlled	4.15	.75	43
	Designer Controlled	4.16	.70	43
	Total	4.15	.72	86
Intrinsic Value	Learner Controlled	3.97	1.39	43
	Designer Controlled	3.86	.68	43
	Total	3.91	1.09	86

The results of the analysis revealed no significant differences in terms of IMI type eliciting cognitive processes related to self-regulation [$F(1,87) = 1.31, p = 0.26$], cognitive strategy [$F(1,87) = 1.50, p = 0.23$], self-efficacy [$F(1,84) = .01, p = 0.95$], and intrinsic value [$F(1,84) = .29, p = .62$]. This indicates that both design types were equivalent in the way they influenced these cognitive processes.

If the design did not support cognitive processing related to self-regulation, it was further hypothesized, that the amount of cognitive load should then be increased in the learner controlled IMI when compared to the designer controlled IMI type. The most appropriate analysis approach to test this part of the hypothesis is to use a 2 x 6 (two levels of IMI type by six levels of cognitive load demands) multivariate analysis of variance (MANOVA), with IMI type as the between subjects factor and the NASA TLX overall mean cognitive load scales as the dependent variables. NASA TLX overall scale mean scores were calculated by multiplying the individual scales for cognitive load importance by the individual scales for cognitive load demands. The

result allowed for a score between 0 and 100, indicating an overall cognitive load score for each scale (physical, time, success, effort, frustration, and mental). Table 6 presents the means and standard deviations for scores on the dependent variables (Table 14).

Table 14 NASA- TLX cognitive load by IMI type

	IMI_type	M	SD	n
TLX-Physical	Learner Controlled	9.23	15.89	39
	Designer Controlled	8.34	13.99	43
TLX-Time	Learner Controlled	18.59	23.23	39
	Designer Controlled	20.00	23.79	43
TLX-Success	Learner Controlled	53.18	24.51	39
	Designer Controlled	50.79	26.84	43
TLX-Effort	Learner Controlled	28.54	22.99	39
	Designer Controlled	28.37	26.08	43
TLX-Frustration	Learner Controlled	33.90	25.51	39
	Designer Controlled	28.07	30.17	43
TLX-Mental	Learner Controlled	30.74	24.43	39
	Designer Controlled	24.30	20.17	43

The results of the analysis revealed no significant differences in terms of IMI type eliciting cognitive load related to variables of overall physical demand [$F(1,80) = .07, p = 0.79$], time demands [$F(1,80) = .07, p = 0.79$], success [$F(1,80) = .18, p = 0.68$], effort [$F(1,80) = .01, p = 0.98$], frustration [$F(1,80) = .88, p = 0.35$], and mental demands [$F(1,80) = 1.71, p = 0.20$]. This fails to support the hypotheses and suggests that both design types were equivalent in the way they influenced cognitive load demands.

In order to rule out the effects of cognitive processes related to self-regulation from pretest to posttest, *a priori* repeated measures analysis of covariance (MANCOVA) was conducted with IMI type as the fixed factor and the MSLQ scales as the dependent variables. Assumptions of homogeneity of variance and homogeneity of covariance matrices were met, as Levene's Test of homogeneity and Box's M were not significant ($p > 0.05$). Only self-regulation

had a significant impact, $F(1,75) = 6.40$, $p = 0.01$, $\eta^2_p = 0.08$. These results are further displayed in Table 15.

Table 15 *MSLQ by IMI type*

Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
Self-regulation	1	48.91	6.40	0.01**
Cognitive strategy	1	14.16	1.85	0.18
Self-efficacy	1	.67	.09	0.77
Intrinsicvalue	1	6.17	.81	0.37
Error	75	573.01		

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Further analysis was conducted using the Bonferroni post hoc multiple comparison procedure. Parameter estimates indicate significant results for self-regulation on pretest scores, $t(1) = 2.99$, $p < .01$, $\eta^2_p = .11$. This indicates that learners who came into the training with higher self-regulation strategies tended to do better on the pretest but by the time they reached the posttest this effect had no impact on score results.

Next, a *priori* repeated measures analysis of covariance (MANCOVA) was conducted with IMI type as the fixed factor and the NASA TLX cognitive load scales as the dependent variables. Assumptions of homogeneity of variance and homogeneity of covariance matrices were met, as Levene's Test of homogeneity and Box's M were not significant ($p > 0.05$).

Although, the frustration scale came close to being significant, the result failed to be significant for any of the TLX cognitive load demands scales (Table 16).

Table 16 NASA TLX cognitive load demands by IMI type

Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
TLX-Physical	1	15.69	1.52	0.22
TLX-Time	1	05.33	0.51	0.48
TLX-Success	1	00.75	0.07	0.79
TLX-Effort	1	00.16	0.02	0.90
TLX-Frustration	1	30.16	2.91	0.09
TLX-Mental	1	16.39	1.58	0.21
Error	71	10.35		

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

The NASA TLX cognitive load scales provide not only an overall measure on each of the subscales, but can be further broken down into cognitive load “importance” and “demands” scales. The cognitive load importance scales provide a measure of “How important were each of the following factors in contributing to the workload you experienced when completing the self-learning strategies IMI.” This provides another level of analysis to help determine if the amount of importance placed on these variables can account for a degree of the variance. Further analysis was conducted using a repeated measures analysis of covariance (MANCOVA) with IMI type as the fixed factor and the NASA TLX importance scales as the dependent variables. Assumptions of homogeneity cognitive load of variance and homogeneity of covariance matrices were met, as Levene’s Test of homogeneity and Box’s M were not significant ($p > 0.05$). Table 17 presents the results of the significance test.

Table 17 NASA TLX cognitive load Importance scales by IMI type

Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
TLX-Physical	1	00.53	0.05	0.82
TLX-Time	1	12.16	1.15	0.29
TLX-Success	1	03.66	0.35	0.56
TLX-Effort	1	00.01	0.01	0.98
TLX-Frustration	1	51.74	4.91	0.03*
TLX-Mental	1	00.86	0.08	0.78
Error	71	10.55		

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Further analysis was conducted using the Bonferroni post hoc multiple comparison procedure. Parameter estimates indicate no significant results for NASA TLX importance scale of frustration on pretest scores [$t(1) = 1.68, p > 0.05$], however significant results were found for posttest scores [$t(1) = -2.15, p < 0.05, \eta^2_p = 0.56$]. This indicates that learners who experienced a high level of frustration, tended to score poorer on the posttest.

The NASA TLX demands scales measures how demanding the self-learning strategy was based on each of the scales. Further analysis was conducted using repeated measures analysis of covariance (MANCOVA) with IMI type as the fixed factor and the NASA TLX demands scales as the dependent variables. Assumptions of homogeneity cognitive load of variance and homogeneity of covariance matrices were met, as Levene's Test of homogeneity and Box's M were not significant ($p > 0.05$). Results did not indicate significant results for any of the NASA TLX demands scales. Table 18 presents the results of the significance test.

Table 18 *NASA TLX cognitive load demands by IMI type*

Source	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P</i>
TLX-Physical	1	02.18	0.21	0.65
TLX-Time	1	02.81	0.26	0.61
TLX-Success	1	00.29	0.03	0.87
TLX-Effort	1	00.46	0.04	0.84
TLX-Frustration	1	24.43	2.30	0.13
TLX-Mental	1	15.99	1.50	0.22
Error	75	10.63		

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Hypothesis 3

(3) If tailored training design does not support differences in cognitive processes related to self-regulation and cognitive load demands are not significantly impacted, then military experience differences (rank) could impact these variables.

- a. If military experience by rank impacts both cognitive processes related to self-regulation and cognitive load demands there should be a significant difference in the relationships between the two groups.

To analyze this portion of the hypothesis, experience differences were first explored based on age differences between the two testing conditions (BLC and ALC courses). The best test to analyze these variables is a one-way analysis of variance (ANOVA), which indicated a significant difference between ages in each group, $F(1,87) = 30.52, p=0.001$. BLC was also found to be primarily composed of less experienced NCOs (E4), whereas ALC had the more senior level NCOs (E5 & E6), indicating a fairly split for experience differences between the two courses.

An analysis was run to test the differences between cognitive processes related to self-regulation and cognitive load demands with individual learning experience ratings. First, significance was tested using a 2 x 4 (two levels of IMI type by four levels of cognitive processing) multivariate analysis of variance (MANOVA) to see if military experience significantly impacted cognitive processes related to self-regulation. Table 19 presents mean scores and standard deviations broken out by course.

Table 19 *Cognitive processes related to self-regulation by course*

Variables	Course					
	BLC			ALC		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Self-Regulation	7	.71	.53	2	.52	.53
Self-Efficacy	7	.16	.83	9	.15	.57
Cognitive Strategy	7	.91	.66	2	.15	.39
Intrinsic Value	7	.11	1.34	9	.67	.61

Results of the analysis did not reveal significant differences for self-efficacy [$F(1,84) = .002, p= 0.97$], however there were marginally significant differences for self-regulation [$F(1,87) = 2.84, p=0.09$], cognitive strategy [$F(1,87) = 2.89, p= 0.09$], and intrinsic value [$F(1,84) = 3.48, p= 0.06$]. Although the scores were not quite to the level of significance, the mean scores for the BLC group appeared on average to be higher than those of the ALC group. These factors might be indicative of their level of motivation.

Next, a 2 x 6 (two levels of IMI type by six levels of cognitive load demands) multivariate analysis of variance (MANOVA) was conducted to see if military experience significantly impacted overall cognitive load. Table 20 presents the mean scores and standard deviations between the two courses.

Table 20 NASA TLX Cognitive load demands by course

Variables	Course					
	<i>n</i>	BLC		<i>n</i>	ALC	
		<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>
TLX Physical	3	.02	13.14	9	9.59	16.64
TLX Time	3	0.58	25.32	9	17.95	21.33
TLX Success	3	4.35	25.94	9	49.26	25.34
TLX Effort	3	5.58	26.59	9	20.59	19.45
TLX Frustration	3	3.51	25.94	9	38.92	28.34
TLX Mental	3	8.14	21.90	9	29.82	22.95

There were observed mean score differences between BLC and ALC, with BLC tending to have higher scores. However, significant differences were not found between the two groups on TLX for physical demands [$F(1,80) = .23, p = 0.64$], TLX time demands [$F(1, 80) = .26, p = 0.61$], TLX success/performance [$F(1,80) = .81, p = 0.37$], and TLX mental demands [$F(1,80) = .89, p = 0.35$]. Significant differences were found between groups and TLX effort demands [$F(1,80) = 8.35, p = 0.01$], and TLX frustration demands [$F(1,80) = 6.61, p = 0.01$].

Further analysis was conducted to test the relationship between cognitive processes and cognitive load demands by experience (course type). To explore these relationships, data was split between the two groups and a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between two variables for cognitive processing scores and cognitive load demand scores by participants in the two courses. To investigate differences in participants responses, a pattern analysis was then conducted using the scores from Pearson's correlations allowing for group comparisons, to examine if and what the contrasting relationships are between the two groups. Table 21 presents the Pearson correlations for significantly different relationships between the two groups.

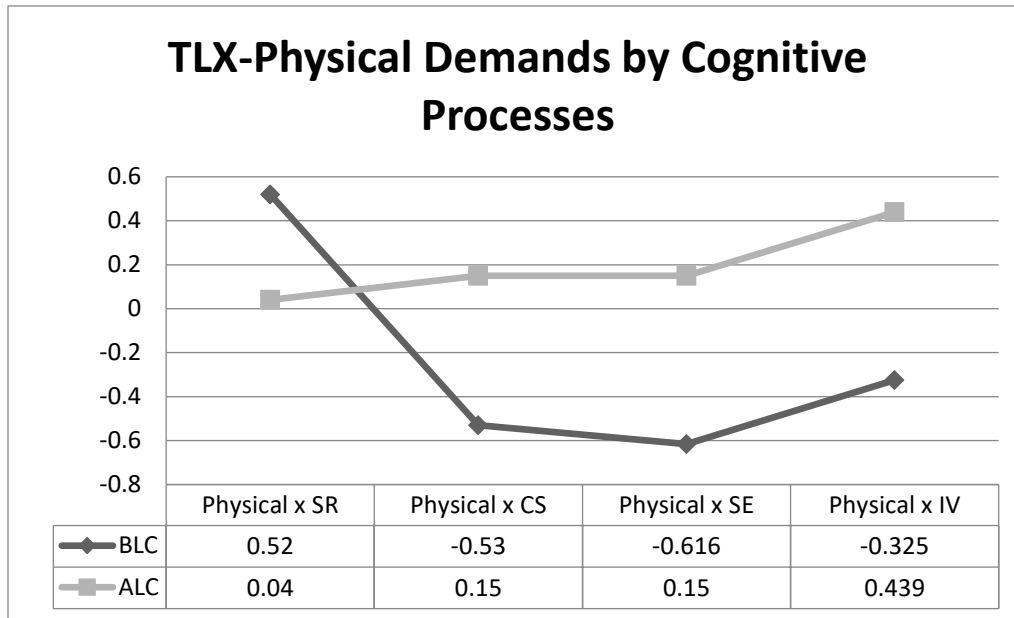
Table 21 *Pearson correlations cognitive load demands and cognitive processing related to self-regulation by course*

	<u>BLC</u>	<u>ALC</u>
	<i>r</i>	<i>r</i>
TLX physical by self-regulation	.52***	.04
TLX physical by cognitive strategy	-.53***	.15
TLX physical by self-efficacy	-.616***	.073
TLX physical by intrinsic value	-.325*	.439**
TLX Time by cognitive strategy	-.334*	.193
TLX time by self-efficacy	-.342*	.240
TLX time by intrinsic value	-.254	.327*
TLX success by self-regulation	.276	.373*
TLX effort by intrinsic value	.275	.328*
TLX frustration by intrinsic value	-.315*	-.224

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

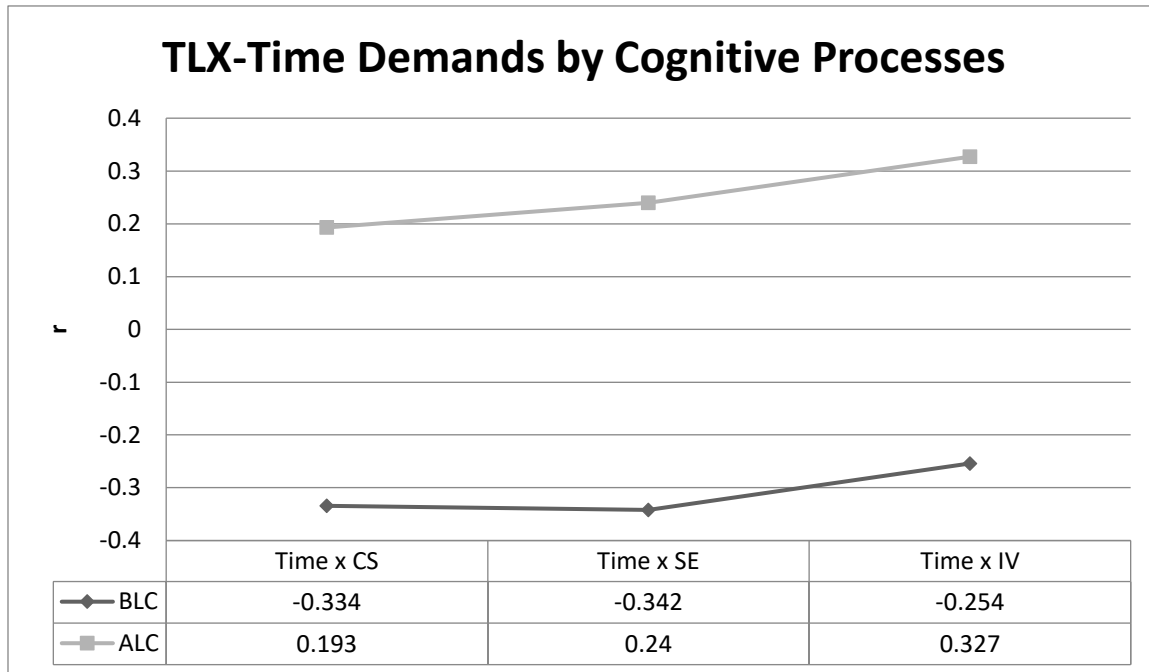
Following the pattern analysis process described above, sharp contrast were then analyzed to determine an overall difference in between group patterns. Based on these findings, it appears that the more novice learners (BLC group) experienced more negative relationships on cognitive processing for physical cognitive load demands as they are related to cognitive processing when compared to the ALC group. Physical demands variable was influenced by the time of day and how many other competing factors participants had going on at that time. These relationships were then graphed out to portray a visual representation of the disparities (Figure 9).

Figure 9. Differences for physical demands by cognitive processes



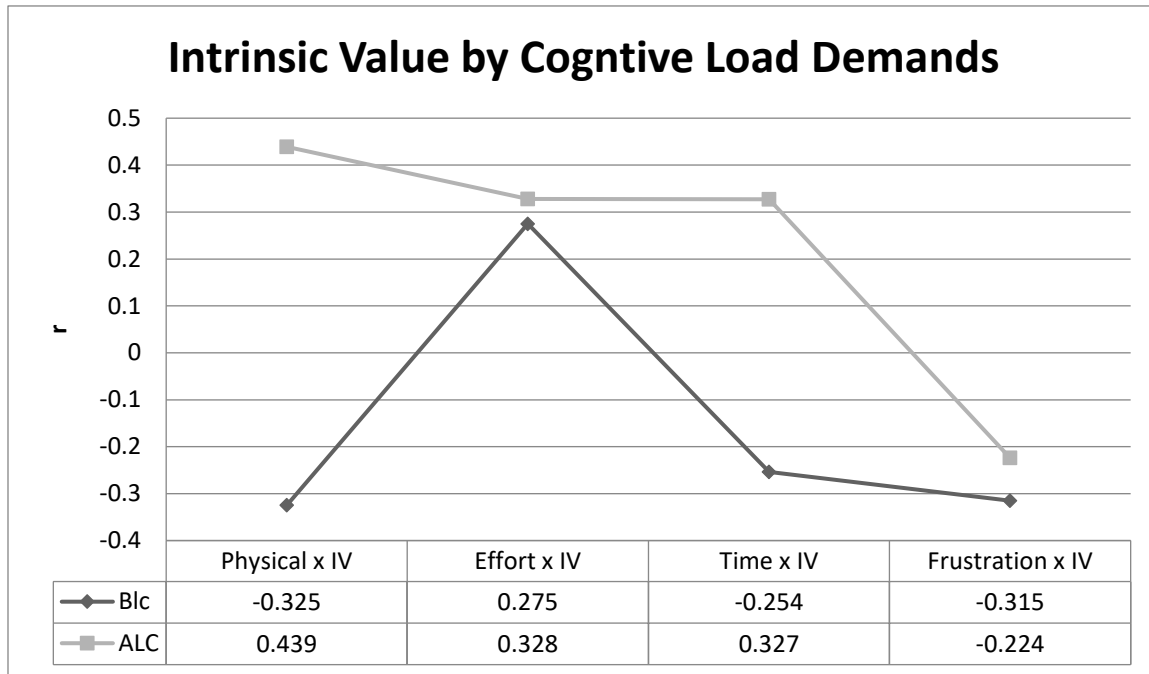
Similar results were found for cognitive load demands related to time in relation to cognitive processes. The time demands scale measured the amount of time a participant felt they had, whether they felt hurried or rushed, when compared to the cognitive processes they were using as they progressed through the IMI. It appears that the more pressure on time demands the ALC group felt, the higher they self-reported cognitive processes related to cognitive strategy use, self-efficacy, and intrinsic value. In contrast, there was a negative relationship with these variables as self-reported by the BLC group. These relationships were then graphed out to portray a visual representation of the disparities (Figure 10).

Figure 10. Differences for time demands by cognitive processes



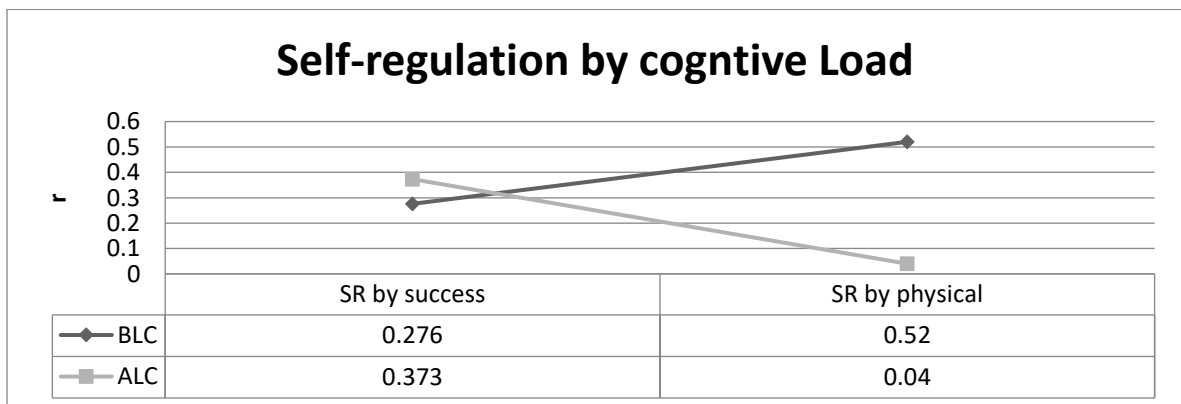
There appears to be a positive relationship for intrinsic value and cognitive load demands on the physical scale, effort scale, and time scale for the ALC group. A negative relationship was observed for both BLC and ALC for intrinsic value and cognitive load frustration scale. Intrinsic value is associated with motivation and the personal value a person places on the task or content they are engaged in. For instance, this data indicates that the more effort, how hard the person had to work, the more they appeared to value the content they were learning. These relationships were then graphed out to portray a visual representation of the disparities (Figure 11).

Figure 11. Differences for intrinsic value by cognitive load demands



Both groups experienced significantly different relationships for self-regulation when compared to cognitive load scales of success and physical demands. This relationship suggests that the more a participant felt they succeeded in accomplishing the training, the higher their ratings were on scales of self-regulation. These relationships were then graphed out to portray a visual representation of the disparities (Figure 12).

Figure 12. Differences for self-regulation by cognitive load demands



The experiences between the more novice group (BLC) and the experienced group (ALC) appear to be different on several self-report rating scales indicating that these variables impacted each group differently.

Hypothesis 4

(4) If learning experiences are related to cognitive processes and cognitive load demands, then there should be a significant relationship between learning experience ratings on cognitive processes scores and cognitive load demand scores.

- a. There should be a positive relationship between participants rating their learning experiences higher and increase scores in cognitive processes and cognitive load demands.

This hypothesis examines the role of the quality of learning experiences and how they related to cognitive processing and cognitive load demands. Higher quality learning experiences were expected to yield higher scores on cognitive processes related to self-regulation and cognitive load demands. Table 22 depicts the mean and standard deviations for the quality of learning experiences, cognitive processing related to self-regulation scales, and overall cognitive demands scales.

Table 22 *Learning experience by cognitive processing and cognitive load demands*

	<i>M</i>	<i>SD</i>	<i>n</i>
Quality of learning experience	3.20	01.01	85
Quality of design and content	4.00	00.71	85
Continuity of topics	3.92	00.74	85
Credibility of examples	3.61	00.86	85
Focus and relevance	3.70	00.82	85
Tracking progress	3.85	01.05	85
Self-regulation	3.62	00.54	89
Cognitive strategy	3.82	00.56	89
Self-efficacy	4.16	00.72	86
Intrinsic value	3.91	01.09	86
TLX Physical	8.77	14.84	82
TLX Time	19.33	23.39	82
TLX Success	51.93	25.62	82
TLX Effort	28.45	24.51	82
TLX Frustration	30.84	28.03	82
TLX Mental	27.37	22.39	82

To analyze the next part of the hypothesis, a 2 x 6 (two levels of course by six levels of quality for learning experience as the dependent variables) multivariate analysis of variance (MANOVA) was performed. Although, mean score differences were not significant by course (mean quality of learning experience [$F(1,83) = 3.52, p = 0.06$], mean quality of design content [$F(1, 83) = .00, p = 0.99$], mean continuity of topics [$F(1,83) = .04, p = 0.84$], mean credibility of examples [$F(1,83) = 3.07, p = 0.08$], mean focus and relevance [$F(1,83) = 1.68, p = 0.19$], and tracking progress [$F(1,83) = .00, p = 0.98$]); quality of learning experiences, quality of design content, credibility of examples, and continuity of topics were leaning toward being significant. Means and standard deviations are presented in Table 23.

Table 23 *Mean quality of learning experiences*

Variables	Course					
	BLC			ALC		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Quality of learning	45	3.40	1.04	40	2.97	1.05
Quality of design	45	3.97	0.83	40	3.97	0.56
Continuity of topics	45	3.93	0.85	40	3.90	0.60
Credibility of examples	45	3.81	0.84	40	3.44	0.71
Focus and relevance	45	3.81	0.84	40	3.59	0.78
Tracking progress	45	3.84	1.08	40	3.85	1.03

Given that there was some significance for the relationships between cognitive processing scores related to self-regulation and overall cognitive load scores, further analysis was conducted to test these relationships with participants quality of learning experiences. To explore these relationships, a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between two variables (cognitive processes related to self-regulation and quality of learning experiences). Table 24 presents the Pearson correlations for significantly different relationships between the two groups.

Table 24 *Correlation of learning experience relationships with self- regulation*

	Mean quality of learning experience	Mean quality of design and content	Mean continuity of topics	Mean credibility of examples	Mean focus and relevance	Tracking progress
Self-Regulation	.19	.42***	.49***	.38***	.37***	24*
Self-Efficacy	.23*	.43***	.36***	.31**	.36***	28**
Intrinsic Value	.38***	.37***	.37***	.50***	.34**	27*
CognitiveStrategy	.23*	.47***	.54***	.43***	.35***	36***

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Next, further analysis was conducted to test the relationship between cognitive load demands and mean quality of learning experiences. To explore these relationships, a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear

relationship between the two variables. Table 25 presents the Pearson correlations for significantly different relationships between the two groups.

Table 25 *Correlation of learning experiences with TLX-overall cognitive load*

<i>TLX Multi</i>	Mean quality of learning experience	Mean quality of design and content	Mean continuity of topics	Mean credibility of examples	Mean focus and relevance	Tracking progress
Physical	.15	-.10	-.05	-.02	-.03	-.23*
Success	.56***	.36***	.36***	.39***	.46***	.36***
Time	-.04	.01	.04	-.01	.02	.08
Effort	.41***	.20	.19	.30**	.23*	.11
Frustration	-.28**	-.15	-.15	-.27*	-.31**	-.17
Mental Demands	.29**	.10	.14	.19	.08	.01

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Next, further analysis was conducted to test the relationship between the cognitive load importance scales and mean quality of learning experiences. To explore these relationships, a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between the two variables. Table 26 presents the Pearson correlations for significantly different relationships between the two groups.

Table 26 *Correlation of learning experiences with TLX- cognitive load importance scales TLX Importance*

	Mean quality of learning experience	Mean quality of design and content	Mean continuity of topics	Mean credibility of examples	Mean focus and relevance	Tracking progress
Physical	.40**	.17	.19	.15	.21	.02
Success	.51***	.33**	.38***	.39***	.38***	.20
Time	.33**	.32**	.32**	.28**	.28**	.28**
Effort	.40***	.28**	.34**	.33**	.30**	.04
Frustration	.08	.05	.04	.02	.02	.01
Mental Demands	.38***	.34**	.37***	.36**	.30**	.13

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

Next, further analysis was conducted to test the relationship between the cognitive load demands scales and mean quality of learning experiences. To explore these relationships, a Pearson Product-Moment Correlation Coefficient was computed to give an indication of the linear relationship between the two variables. Table 27 presents the Pearson correlations for significantly different relationships between the two groups.

Table 27 *Correlation of learning experiences with TLX- cognitive load demands scales*
TLX Demands

	Mean quality of learning experience	Mean quality of design and content	Mean continuity of topics	Mean credibility of examples	Mean focus and relevance	Tracking progress
Physical	.05	-.24*	-.15	-.11	-.13	-.25*
Success	.33**	.22*	.11	.16	.33**	.28*
Time	-.14	-.15	-.08	-.15	-.11	-.05
Effort	.33**	.10	.11	.21	.14	.08
Frustration	-.43***	-.27**	-.22*	-.42***	-.43***	-.24*
Mental Demands	.23*	-.055	.04	.08	-.05	.01

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Given the overall significant relationships between both cognitive processes related to self-regulation and cognitive load demands for learning experiences, a deeper level of analysis was conducted to compare the degree of these relationships between the two courses. First, data was split between the two courses (BLC and ALC groups) and then a Pearson Product-Moment Correlation Coefficient was conducted to determine the magnitude of the relationship on these factors. The split in these relationships was then compared to determine where significant differences between the two courses occurred. Table 28 indicates those relationships where there was the largest disparity between the correlations and the courses. Only those factors where there was a discrepancy reported was used to give a clear picture of the differences between the two courses. In some cases one course had a significant relationship and the other did not. This indicates discrepancies in the way experience (by course) impacts these factors.

Table 28 *Disparity between the two courses for the relationship between quality of learning experiences and cognitive processes*

		Quality of learning experience	Design and content	Continuity of topics	Credibility of examples	Focus and relevance	Tracking progress
Self-Regulation	BLC					.42**	.34*
	ALC					.29	.12
Cognitive Strategy	BLC				.45**	.44**	
	ALC				.30	.15	
Self-efficacy	BLC	.32*	.48***	.41**	.38**		
	ALC	.09	.31	.24	.16		
Intrinsic value	BLC	.40**	.41**	.40**		.49***	
	ALC	.30	.32	.32		.08	

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$.

There appears to be a stronger relationship between these factors for the BLC (less experienced) group, than for the ALC group.

Next, a Pearson Product-Moment Correlation Coefficient was conducted to determine the magnitude of the relationship of the cognitive load demands factors between the two courses (BLC and ALC). The split in these relationships was then compared to determine where significant differences between the two courses occurred in correlations between mean learning experience ratings and cognitive load demands scales. Table 29 indicates that relationships where there was the largest disparity between the course correlations occurred. Only those factors where there was a discrepancy are reported to give a clear picture of the differences between the two courses. In some cases one course had a significant relationship and the other did not. This indicates discrepancies in the way experience (by course) impacts these factors.

Table 29 *Disparity between the two courses for the relationship between quality of learning experiences and cognitive load demands*

		Quality of learning experience	Design and content	Continuity of topics	Credibility of examples	Focus and relevance	Tracking progress
Physical demands	BLC						-.09
	ALC						-.36*
Time Demands	BLC			-.11			
	ALC			.31*			
Success	BLC						.28
	ALC						.46**
Effort	BLC	.43**		.13	.19		
	ALC	.31		.31*	.40**		
Frustration	BLC	-.17			-.14	-.23	
	ALC	-.32*			-.38*	-.35*	
Mental Demands	BLC	.45**			.32*	.39**	
	ALC	.17			.07	-.22	

Note. *= $p < .05$, **= $p < .01$, ***= $p < .001$.

Summary

This chapter presented the results of the analysis used to evaluate the mediating variables of cognitive processes related to self-regulation as measured by scales on the MSLQ and cognitive load demands as measured by scales on the NASA-TLX in tailored versus non-tailored IMI. Data analysis involved the use of quantitative statistical procedures to test levels of significance, along with the magnitude of relationships between the different variables. Significant results were found for self-regulation on pretest but not posttest scores. Those who did not have high self-regulation coming into the training, it is likely that the training increased their self-regulation use by the time they took the posttest. Additionally, self-regulation and cognitive load appeared to have different effects on participants depending on their learning experiences and career experience. The next chapter of this dissertation will discuss these results further.

CHAPTER 5 DISCUSSION AND CONCLUSION

Overview

The purpose of this study was to investigate cognitive processing related to self-regulation and cognitive load as factors potentially mediating how learners respond to tailored (learner controlled) versus non-tailored design (designer controlled) IMI design. The potential impact of career experience and learning experiences was of additional interest. It was believed that the tailored-training design may support a reduction in cognitive load and increase self-regulation strategy use. This section will conclude with a discussion of the limitations, recommendations, and viable avenues for future research.

Mediating Variables and Instructional Design

The tailored training IMI was hypothesized to support cognitive processes related to self-regulation (increase it), thereby decreasing cognitive load when compared to the control group. This study failed to find significant main effects for IMI type differences and the mediating variables of cognitive processing related to self-regulation and cognitive load demands. Learning from pretest to posttest did occur, further analysis failed to indicate improvement based on the IMI type. Both the tailored IMI and designer controlled IMI had the same influence on the improvement observed in posttest scores. It was suggested that the learner controlled IMI (tailored) would require the participant to hold more information in working memory about where to go and what to do versus the designer controlled IMI. This would in turn cause learners to engage in the use of self-regulation strategies to reduce the burden on the participants reported cognitive load demands. However, this study failed to support this, as both types also appeared equivalent in the way they influenced overall cognitive processes related to self-regulation, along with the amount of cognitive load demands they placed on the learners.

Next, if the tailored training did not support cognitive processes related to self-regulation, it was hypothesized that cognitive load would be increased. This would in turn cause both learners' test performance and reported quality of their learning experience to be decreased compared to the control group. Although the nature of IMI design itself is thought to support the use of self-regulation strategies, such as understanding what needs to be learned (Graves, et al., 2012; Blackenbeckler, et al., 2016), this was not found to be the case in this study. Based on the hypothesis, it was also assumed that learning performance would degrade if cognitive load demands are too high, however this study failed to support this assumption. However, there were noted differences for self-regulation on pretest scores. This indicates that individuals who came into the training with self-regulation skills tended to score better on the pretest but by the time they reached the posttest these differences did not appear to have a significant impact on learning. In other words, at the point where self-regulation was measured in this study, it appears that learners already high in self-regulation are bringing those skills to the training, which in turn resulted in higher pretest scores.

What remains unclear is whether these nonsignificant results actually support the null hypothesis that there was no difference between the instructional designs and the way these mediating variables impacted learning or are these results potentially influenced by other issues. Although based on anecdotal observations and participants comments, an alternative explanation for the results could lie within the design of the courseware. It was observed that the designer controlled content allowed learners to engage in their own self-pacing. In other words, although the designer controlled IMI required the learners to go through the content in a "lock-step" fashion, it did not prevent those learners from self-clicking through the content, allowing them to

get to get to unfamiliar content on their own. Evidence to support this possibility can be found through participant comments they wrote down, as noted below:

Designer Controlled Comments:

“It’s too easy to skip through, and a [sic] student’s is pressed for time, he will not learn much. Also the scenarios are painfully slow.”

“Do not allow content to be clickable without finishing the entire slide, or slide users will rush through/slick through just to finish the job.”

“Probably don’t make it to where you can skip the entire presentation.”

Career Experience

Next, it was hypothesized that military career experience could impact self-regulation and cognitive load variables differently based on the career disparity between the two groups. Experience impacts the refinement of strategy selection (Ericsson & Charness, 1994). The more experience an individual has with a topic, the more refined their strategy use and selection becomes and thus less intrinsic cognitive load is potentially placed on the participant (Van Merriënboer & Sluijsman, 2009; Kirschner, Sweller, & Clark, 2006). This impacts both self-regulation processes, such as knowing “what” or “when” to solve a given problem (DeShon, Brown, & Greenis, 1996; Ferrari, 2001; Lens, 2008; Van Dillen, Papies, & Hofmann, 2013), as well as, the development of complex schema structures allowing for the limitations of working memory to be negated (Sweller, 2011). Variations in past experience, knowledge schemes, and level of expertise, could imply that different learners will have different learning needs (Ericsson & Charness, 1994). However, more experienced individuals will also feel a greater sense of frustration when required to learn the same information, which from a cognitive load perspective can lead to a redundancy effect; potentially negative learning to occur (Mayer & Moreno, 2002).

This study was conducted in two Army courses that are taken at very different points in a soldier's career (BLC & ALC). As expected, significant age and rank differences were found between the two participant groups. BLC was comprised of soldiers who were early in their career (novice level NCOs), while ALC was comprised of higher level, career experienced soldiers. This made it possible to analyze the influence of experience differences between these two groups. Indeed, results supported these suggested differences through self-reported cognitive load demands. The BLC group tended to score higher on effort scales, while ALC tended to score higher on frustration scales. The effort scale asked participants to rate how hard they had to work to accomplish their level of performance during the training. Research indicates that individuals with more experiences tend to use a set of modified more specialized set of strategies and expend less effort. These findings support this line of research. Findings from this study also suggest that the ALC participants experienced higher levels of frustration than BLC participants. It is possible that at this point in the ALC participant's career they had already developed several learning strategies they were successful at using and this training was instructing them to use other strategies that were directly competing with the strategies they were familiar or comfortable with using.

On scales that measured cognitive load physical demands, results suggests those who were more junior in their career experienced a stronger relationship with the use of self-regulation strategies, while an inverse relationship between physical demands and cognitive strategies, self-efficacy and intrinsic value was noted. This suggests the BLC level participants who felt they experienced higher physical demands, the less they tended to value the training, believe in their ability to learn from the training and to utilize effective cognitive strategies. In contrast the ALC participants did not appear to be as impacted by physical demands in relation to

self-regulation, cognitive strategy use, or self-efficacy. Instead, there was a suggested higher relationship between physical demands and intrinsic value, suggesting that participants tended to value the training when they felt it was more physically demanding.

Time demands also tended to impact experience levels differently. In the BLC group those participants who tended to feel more time pressure also tended to use less cognitive strategies, experienced lower self-efficacy, and less intrinsic value. In contrast, those in the ALC course who rated time pressures as high also tended to have higher intrinsic-value scores, while cognitive strategy and self-efficacy were less impacted. Those who reported expending more effort to complete the IMI also tended to report higher levels of intrinsic value, with ALC reporting higher levels than the BLC group. Lastly, when participants in both groups reported higher levels of frustration, they also tended to report lower levels of intrinsic value. Frustration had a negative impact on overall intrinsic value. This means that when participants, regardless of their level of experience felt frustrated with the training, they tended to value the training less.

Overall, the biggest difference between the two groups suggests that physical and time demands had a greater negative impact on cognitive strategy use, intrinsic value and self-efficacy for the BLC participants, whereas these demands appear to have a positive impact on both self-efficacy and intrinsic value for the ALC participants. Both groups experienced positive relationships for success and self-regulation, along with effort and intrinsic value, while both also experienced a negative relationship with frustration and intrinsic value. These findings suggest that the relationship between cognitive strategy use and cognitive load demands variables is different depending on the learner's level of career experience.

Learning Experiences

Lastly, the role of the quality of learning experiences and how they are related to cognitive processing and cognitive load demands were examined. It was hypothesized that higher quality learning experiences were expected to yield higher scores on cognitive processes related to self-regulation and cognitive load demands based on reported learning experiences. Results of this study supported this hypothesis. This line of questioning is important because learning experiences impact overall expectancies. Expectancies are beliefs about how well one will do in the future. Factors that mediate expectancies include attributions, choice, control, task value, effort, and utility. Although values play a large role in expectancy value theory, they are only one piece of a more complex puzzle, where ability and other conceptual qualities dynamically impact overall outcomes. Success and failure do not impact expectancies directly; however, the attributions of task outcomes can influence future expectancies (Eccles et al., 1983; Eccles et al., 1998; Wigfield & Eccles, 2000). The assumption is that, in a situation where expectancies are high, the individual is more likely to engage in effective learning strategies, persist when the task is hard, and attribute success and failure to controllable personal factors, such as study time and ability (Wigfield & Eccles, 2000). It involves an active process of making-meaning through interaction and experiences, connecting or modifying new information into existing memory schemas. This in turn is impacted by individual learning experiences.

Although, learning experiences were not significantly different between the BLC and ALC participants, the overall quality of learning experiences and credibility of examples were leaning toward significance. Deeper analysis revealed several positive relationships between learning experiences and cognitive processing. For instance, participants who tended to use self-regulation strategies also reported higher levels of learning experiences related to the quality of

design, continuity of topics presented, credibility of the examples, focus and relevance, along with the ability to track progress. Learning experiences had a direct positive relationship with all of the cognitive processes, suggesting medium to large effects noted between self-regulation and design of content, along with the continuity of topics presented. Participants who reported higher levels of self-efficacy also tended to report a positive relationship with the quality of design. Cognitive strategy use tended to have a higher relationship with learning experiences related to credibility of examples, design quality, and continuity of topics. Positive relationships were also noted for success across all of the learning experiences scales. Whereas, quality of learning experiences, credibility of examples and mean focus and relevance had an inverse relationship with frustration. As the individual experienced higher levels of frustration they also reported lower levels of quality learning experiences.

Experience was also noted to impact these relationships, with BLC reporting more significant relationships between overall learning experiences and cognitive processing, most notably with self-regulation and focus and relevance, cognitive strategy use with credibility of examples and focus and relevance, self-efficacy with content design and continuity of topics, and intrinsic value with quality of learning experience, design of content, continuity of topics and focus and relevance.

Similar relationships were also reported with the BLC participants for cognitive load demands and overall user experience. Participants that reported expending greater effort also reported higher quality of learning experiences, whereas more experienced participants who reported expending more effort reported higher quality of credibility of learning examples. Lower experienced learners also reported higher mental demands and a relationship with quality of learning experiences and focus and relevance. In contrast, more experienced participants

reported higher levels of frustration being negatively associated with the quality of learning experiences, credibility of examples, and focus and relevance.

Limitations

The study supported the need for further research in this area and with this population. It is important to continue to gain insights into how cognitive processes, cognitive load demands, expertise, and learning experiences all interact to either improve or inhibit overall learning in IMI training. Although learning did occur in the training, the nature of the participants, and the type of training could have impacted the overall results as well. The training was geared toward teaching learning strategies to Army soldiers. It could be that the level of motivation for the topic, along with the many competing demands placed on soldiers also accounted for some of the variance in the results. It also suggested the need to study the population when comparing the differences between the population and a less structured, scheduled population such as college students. Another limitation noted was with the demands that the participants were under when they engaged in the learning experiment. Some of the participants had additional duties that were competing with the time it took to complete the IMI training. Future studies should try to limit competing priorities when working with soldiers.

Implications

Although there were some interesting suggested relationships between these variables, it also speaks to the need for further research that focuses solely on each variable. In addition, it suggests that when individuals know the material, they may already be engaging in self-tailoring, whether it be by design or by self-clicking through material. It appears that learner experiences have a significant impact on self-regulation and cognitive load. Whereas, learner expertise will impact how each of these variables are perceived. Less experienced learners will expend more

effort and experience higher self-regulation for novel content than more experienced learners. This helps to support the role of expectancies in learning, along with the need to consider the redundancy principle for this type of training. IMI by its very nature has the potential to impose high cognitive load demands. Because this is the case, it is also necessary for IMI to include learner scaffolding and feedback. Pretest(s) can be used to help the learner understand when and what needs to be learned. One of the main implications for this research was to suggest the need for further research with this population.

Recommendations

while this research was conducted in an Army military setting, and this setting had specific factors that are special to Army soldiers, the findings from this research can extend to the overall adult learning literature. It is true that soldiers are constantly asked to balance a multitude of things, training and education being part of that balance. It is also true that soldiers are required to engage in IMI training frequently in order to learn their military occupational specialty, maintain certifications, or even take leadership related training. All of these factors require soldiers to use effective self-regulation strategies, while working within the limits of cognitive load. However, these soldiers experience some of the same challenges as their counterpart civilians do outside of the military when engaged in IMI. All adult learners progress through self-regulation processes in a similar manner (Zimmerman, 2008).

This research supports the need to consider self-regulation, cognitive load and how they are influenced through learning experiences and expertise effects. When designing IMI training and education, it is important to consider the learners career experiences related to the topic, along with learning experiences the learner will engage in within the IMI. Specifically, junior level or novice learners can benefit from structured scaffolding that is geared toward helping

them gain self-regulation strategies, while helping to minimize cognitive load. More advanced learners, may have a set of strategies they are used to using within a given domain. When asked to repeat old content they are familiar with or to use unfamiliar strategies, these learners will experience a higher amount of frustration, which in turn can have a negative impact on learning. Guiding learners in the development of appropriate self-regulation strategies in a tailored, self-directed learning environment can increase intrinsic value, self-efficacy, cognitive strategy choice and refinement, along with effort, while at the same time reducing negative cognitive load factors, such as frustration demands. It is therefore recommended that soldiers, along with all adult learners become well-versed on strategies to increase self-regulation and decrease cognitive load, while at the same time instructional designers should provide scaffolding to aid in this process and be aware of extraneous cognitive load that could impact successful learning.

Conclusions

This research set out to explore some key variables that are seldom researched together; self-regulation and cognitive load. Although these variables intuitively influence and impact one another, it is difficult to find research that explains these relationships, and even harder to find research that explains these relationships within a military environment for IMI-based training and education. The research led to more questions, specifically related to the complex relationship within all of these factors and the possibility of other influential factors that need to be studied. However, in several instances, such as with experience and expertise, this research provided further support to the educational psychology literature. Future publication of this material is planned within Educational Psychology related journals.

In conclusion, this study supports research related experience differences and how it impacts self-regulation processes, cognitive load demands and overall learning experiences. It

did not support the hypothesis that instructional design differences between tailored IMI and non-tailored would be impacted by cognitive processing and cognitive load demands. However, because there were observed mean score gains between pretest and posttest, it does suggest the need to consider these variables, along with expertise and learner experiences in the design of IMI to optimize potential learning.

This research failed to support the hypothesis that instructional design related to learner controlled versus designer controlled IMI is impacted by cognitive processes or cognitive load. It appears that the impact these variables have on IMI training is far more complicated and complex. Instead of considering how they mediate IMI instructional design principles, it is important to look at how they interact with expertise and overall user experiences to influence learning. Expertise differences were noted for the two groups, along with how these mediating variables impact the learners at the two different levels. Learning experiences also appear to be related to how this dynamic relationship was experienced, with expertise differences also being a factor. Given the complexity that evolved from the nature of these relationships, further research in this area is suggested.

REFERENCES

- Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80*(3), 260-267. doi: 10.1037/0022-0663.80.3.260
- Artino, A. R. (2008). Cognitive load theory and the role of learner experience: An abbreviated review for educational practitioners. *Aace Journal, 16*(4), 425-439.
- Atkinson, J. W. (1964). *An introduction to motivation*. Oxford, England: Van Nostrand. 36-42.
- Azevedo, R. (2005). Using hypermedia as a metacognitive tool for enhancing student learning? The role of self-regulated learning. *Educational Psychologist, 40*(4), 199-209.
- Baddeley, A. D. (1972). Retrieval rules and semantic coding in short-term memory. *Psychological Bulletin, 78*(5), 379-385. doi: 10.1037/h0033477
- Baddeley, A. D. (2002). Is working memory still working? *European Psychologist, 7*(2), 85-97. doi: 10.1027//1016-9040.7.2.85
- Baddeley, A. D., & Hitch, G. (1974). Working memory. *The psychology of learning and motivation, 8*, 47-89.
- Blankenbeckler, P. N., Graves, T. R., & Wampler R. L. (2013). *Addressing point of need in interactive multimedia instruction (IMI): A conceptual review and evaluation*. (ARI Research Report 1969). Fort Belvoir, VA: U.S. Army Research Institute for Behavioral and Social Sciences. DTIC No. 593946
- Blankenbeckler, P.N., Graves, T.R., & Wampler, R.L. (2014). *Designing interactive multimedia instruction to address Soldiers' learning needs* (Research Report 1979). Fort Belvoir, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Blankenbeckler, P. N., Graves, T. R., Dlubac, M., & Wampler, R. L. (2016). *Interactive multimedia instruction for training self-directed learning techniques* (Research Product Report 2016-05). Fort Belvoir, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Boekaerts, M. (1999). Self-regulated learning: where we are today. *International Journal of Educational Research, 31*(6), 445-457. doi:10.1016/S0883-0355(99)00014-2
- Bouffard-Bouchard, T., Parent, S., & Larivee, S. (1991). Influence of self-efficacy on self-regulation and performance among junior and senior high-school age students. *International Journal of Behavioral Development, 14*(2), 153-164.
- Bruner, J. S. (2009). *The process of education*: England, Harvard University Press.
- Brunken, R., Plass, J. L., & Leutner, D. (2004). Assessment of cognitive load in multimedia learning with dual-task methodology: Auditory load and modality effects. *Instructional Science, 32*(1/2), 115-132.
- Chandler, P., & Sweller, J. (1992). The split-attention effect as a factor in the design of instruction. *British Journal of Educational Psychology, 62*(2), 233-246.
- Corno, L. (2008). Work habits and self-regulated learning: Helping students to find a "will" from a "way". In D. H. Schunk, Zimmerman, B.J. (Ed.), *Motivation and Self-Regulated Learning: Motivation and self-regulated learning*. New York: Lawrence Erlbaum Associates.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268. doi: 10.1207/s15327965pli1104_01

- DeShon, R. P., Brown, K. G., & Greenis, J. L. (1996). Does self-regulation require cognitive resources? Evaluation of resource allocation models of goal setting. *Journal of Applied Psychology, 81*(5), 595.
- Eccles, J., Adler, T.F., Futterman, R., Goff, S.B., Kaczala, C.M., Meece, J.L. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Francisco: Freeman.
- Eccles, J., & Wigfield, A. (1985). Teacher expectations and student motivation. *Teacher Expectancies, 21* (3), 185-226.
- Eccles, J. S. (1983). Expectancies values and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Fransico, CA: W.H. Freeman.
- Eccles, J. S., Adler, T.F., Futterman, R., Goff, S.B., Kaczala, C.M., Meece, J.L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75-146). San Fransico, CA: W.H. Freeman.
- Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). *Motivation to succeed*: John Wiley & Sons Inc.
- Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist, 49*(8), 725-747. doi: 10.1037/0003-066x.49.8.725
- Ferrari, J. R. (2001). Procrastination as self-regulation failure of performance: Effects of cognitive load, self-awareness, and time limits on 'working best under pressure'. *European Journal of Personality, 15*(5), 391-406.
- Gerjets, P., Scheiter, K., & Schuh, J. (2008). Information comparisons in example-based hypermedia environments: Supporting learners with processing prompts and an interactive comparison tool. *Educational Technology Research and Development, 56*(1), 73-92.
- Graves, T. R., Blankenbeckler, P.N., & Wampler, R. L. (2014). *Tailoring multimedia instruction to Soldier needs*. Paper presented at the Interservice/Industry Training, Simulation, and Education Conference.
- Graves, T.R., Blankenbeckler, P. N., Wampler, R. L., & Roberts, A. (2015). A comparison of interactive multimedia instruction designs addressing soldiers' learning needs. (ARI Research Report). Fort Belvoir, VA: U.S. Army Research Institute for Behavioral and Social Sciences.
- Graves, T. R., Rauchfuss, G., & Wisecarver, M. (2012). Self-Learning among army noncommissioned officers: Experiences, attitudes, and preferred strategies: DTIC Document.
- Greene, J. A., & Azevedo, R. (2009). A macro-level analysis of SRL processes and their relations to the acquisition of a sophisticated mental model of a complex system. *Contemporary Educational Psychology, 34*(1), 18-29.
- Greene, J. A., Bolick, C. M., & Robertson, J. (2010). Fostering historical knowledge and thinking skills using hypermedia learning environments: The role of self-regulated learning. *Computers & Education, 54*(1), 230-243.
- Greene, J. A., Hutchison, L. A., Costa, L. J., & Crompton, H. (2012). Investigating how college students' task definitions and plans relate to self-regulated learning processing and understanding of a complex science topic. *Contemporary Educational Psychology, 37*(4), 307-320.

- Kalyuga, S. (2007). Enhancing instructional efficiency of interactive e-learning environments: A cognitive load perspective. *Educational Psychology Review*, *19*(3), 387-399. doi: 10.1007/s10648-007-9051-6
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. New York: Associated Press.
- Lens, W. V., M. (2008). Promoting self-regulated learning. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates.
- Mayer, R. E. (2001). *Multimedia learning*. New York: Cambridge University Press.
- Mayer, R. E. (2005). *The Cambridge handbook of multimedia learning*: New York: Cambridge University Press.
- Mayer, R. E. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *American Psychologist*, *63*(8), 760-769. doi: 10.1037/0003-066x.63.8.760
- Mayer, R. E., & Moreno, R. (2002). Aids to computer-based multimedia learning. *Learning & Instruction*, *12*(1), 107-119.
- Mayer, R. E., Deleeuw, K. E., & Ayres, P. (2007). Creating retroactive and proactive interference in multimedia learning. *Applied Cognitive Psychology*, *21*(6), 795-809. doi: 10.1002/acp.1350
- Mayer, R. E., Griffith, E., Jurkowitz, I. T. N., & Rothman, D. (2008). Increased interestingness of extraneous details in a multimedia science presentation leads to decreased learning. *Journal of Experimental Psychology: Applied*, *14*(4), 329-339.
- Mayer, R. E., & Johnson, C. I. (2008). Revising the redundancy principle in multimedia learning. *Journal of Educational Psychology*, *100*(2), 380-386. doi: 10.1037/0022-0663.100.2.380
- Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist*, *38*(1), 43-52.
- McInerney, D. M. (2008). The motivational roles of cultural differences and cultural identity in self-regulated learning. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates.
- Moreno, R. (2004). Decreasing cognitive load for novice students: Effects of explanatory versus corrective feedback in discovery-based multimedia. *Instructional Science*, *32*(1), 99-133. doi: 10.1023/B:TRUC.0000021811.66966.1d
- Moreno, R. (2007). Optimising learning from animations by minimising cognitive load: Cognitive and affective consequences of signalling and segmentation methods. *Applied Cognitive Psychology*, *21*(6), 765-781. doi: 10.1002/acp.1348
- Moreno, R. (2010). Cognitive load theory: more food for thought. *Instructional Science*, *38*(2), 135-141. doi: 10.1007/s11251-009-9122-9
- Moreno, R., & Mayer, R. E. (1999). Cognitive principles of multimedia learning: The role of modality and contiguity. *Journal of Educational Psychology*, *91*(2), 358.
- Newman, R. S. (1994). Adaptive help seeking: A strategy of self-regulated learning. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates.
- Paas, F., Renkl, A., & Sweller, J. (2003). Cognitive load theory and instructional design: Recent developments. *Educational Psychologist*, *38*(1), 1-4. doi: 10.1207/s15326985ep3801_1

- Pajares, F. (2008). Motivational Role of Self-Efficacy Beliefs in Self-Regulated Learning. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates.
- Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research*, 31(6), 459-470. doi:10.1016/S0883-0355(99)00015-4
- Pintrich, P. R. (2000a). An achievement goal theory perspective on issues in motivation terminology, theory, and research. *Contemporary Educational Psychology*, 25(1), 92-104.
- Pintrich, P. R. (2000b). The role of goal orientation in self-regulated learning. In Boekaerts, M, Pintrich, P.R., & Zeidner, M. (2000). *Handbook of self-regulation*, San Diego, CA, Academic Press.
- Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*, 41(4), 219-225.
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82(1), 33.
- Reeve, J., Deci, E. L., & Ryan, R. M. (2004). Self-determination theory: a dialectical framework for understanding sociocultural influences on student. *Big theories revisited*, 4, 31.
- Reeve, J., Ryan, R., Deci, E. L., & Jang, H. (2007). Understanding and promoting autonomous self-regulation: A self-determination theory perspective. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates. 223-244.
- Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (1998). Academic and emotional functioning in early adolescence: Longitudinal relations, patterns, and prediction by experience in middle school. *Development and psychopathology*, 10(02), 321-352.
- Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist*, 26(3-4), 299-323. doi: 10.1207/s15326985ep2603&4_5
- Schiefele, U. (1999). Interest and learning from text. *Scientific Studies of Reading*, 3(3), 257-279. doi: 10.1207/s1532799xssr0303_4
- Schunk, D. H. (2008). Attributions as motivators of self-regulated learning. In Schunk, D. H., & Zimmerman (Ed.), *Motivation and Self-Regulated Learning: Theory, Research, and Applications* (pp. 245-264). New York: Lawrence Erlbaum Associates.
- Schunk, D. H., & Zimmerman, B. J. (2012). *Motivation and self-regulated learning: Theory, research, and applications*: New York: Lawrence Erlbaum Associates.
- Schwier, R., & Misanchuk, E. R. (1993). *Interactive multimedia instruction*. New Jersey: Educational Technology.
- Shell, D. F., & Husman, J. (2008). Control, motivation, affect, and strategic self-regulation in the college classroom: A multidimensional phenomenon. *Journal of Educational Psychology*, 100(2), 443-459. doi: 10.1037/0022-0663.100.2.443
- Shell, D. F., Murphy, C. C., & Bruning, R. H. (1989). Self-efficacy and outcome expectancy mechanisms in reading and writing achievement. *Journal of Educational Psychology*, 81(1), 91-100. doi: 10.1037/0022-0663.81.1.91
- Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257-285. doi: 10.1016/0364-0213(88)90023-7

- Sweller, J., Ayres, P., & Kalyuga, S. (2011). *Cognitive load theory*. New York: Springer.
- Sweller, J., van Merriënboer, J. G., & Paas, F. (1998). Cognitive architecture and instructional design. *Educational Psychology Review*, *10*(3), 251-296.
- U.S. Army Training and Doctrine Command (2011). *The United States Army learning concept for 2015* (TRADOC Pam 525-8-2). Fort Monroe, VA: Department of the Army, Training and Doctrine Command. Retrieved from http://www.tradoc.army.mil/tpubs/pams/tp525-8-2_CH1.pdf
- U.S. Army Training and Doctrine Command (2015). *NCO 2020: Analysis Whitepaper*. Fort Eustis, VA Department of the Army, Training and Doctrine Command.
- Van Dillen, L. F., Papiés, E. K., & Hofmann, W. (2013). Turning a blind eye to temptation: How cognitive load can facilitate self-regulation. *Journal of Personality and Social Psychology*, *104*(3), 427-443.
- van Merriënboer, J. J. G., & Ayres, P. (2005). Research on cognitive load theory and its design implications for e-learning. *Educational Technology Research and Development*, *53*(3), 5-13. doi: 10.1007/bf02504793
- van Merriënboer, J. J. G., & Sluijsmans, D. M. A. (2009). Toward a synthesis of cognitive load theory, four-component instructional design, and self-directed learning. *Educational Psychology Review*, *21*(1), 55-66. doi: 10.1007/s10648-008-9092-5
- Weinstein, C., & Mayer, R. (1986). The teaching of learning strategies. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (Vol. 3, pp. 315-327). New York, NY: Macmillan.
- Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. *Educational Psychology Review*, *6*, 49-78.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-Value Theory of Achievement Motivation. *Contemporary Educational Psychology*, *25*(1), 68-81. doi:10.1006/ceps.1999.1015
- Wigfield, A., Eccles, J. S., & Rodriguez, D. (1998). The development of children's motivation in school contexts. *Review Of Research In Education*, *23*, 73-118.
- Winne, P. H. (2006). How software technologies can improve research on learning and bolster school reform. *Educational Psychologist*, *41*(1), 5-17. doi: 10.1207/s15326985ep4101_3
- Winne, P. H., & Hadwin, A. F. (1998). Studying as self-regulated learning. *Metacognition in educational theory and practice*, *93*, 27-30.
- Winne, P. H., & Hadwin, A. F. (2008). The weave of motivation and self-regulated learning. In Schunk, D. H., & Zimmerman, B.J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates, 297-314.
- Wisecarver, M., Foldes, H., Ferro, G., Cullen, M., Graves, T. R., Rauchfuss, G., Kraiger, K. (2012). Defining antecedents for noncommissioned officer self-learning: A review of the literature. DTIC Document.
- Yeung, A. S., Jin, P., & Sweller, J. (1998). Cognitive load and learner expertise: Split-attention and redundancy effects in reading with explanatory notes. *Contemporary Educational Psychology*, *23*(1), 1-21.
- Zimmerman, B. J., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process goals to outcome goals. *Journal of Educational Psychology*, *89*(1), 29.
- Zimmerman, J. B., (2000). A social cognitive perspective. In Boekarts, M., Pintrich, P., & Zeidner, M. *Handbook of self-regulation*. New York: Academic Press. 13-35.
- Zimmerman, B. J. (2004). Sociocultural influence and students' development of academic self-regulation: A social-cognitive perspective. In D. M. McInerney & S. Van Etten (Eds.), *Big theories revisited* (pp.139-164). Greenwich, CT: Information Age.

- Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166-183.
- Zimmerman, B. J., Schunk, D. H. (2008). Motivation: An essential dimension of self-regulated learning. In Shunk, D. H., & Zimmerman, B. J. (Ed.), *Motivation and self-regulated learning: Theory, research, and applications*. New York: Lawrence Erlbaum Associates.

APPENDIX A: INFORMED CONSENT
DEPARTMENT OF DEFENSE HUMAN RESEARCH PROTECTION PROGRAM

DEPARTMENT OF DEFENSE (DOD) INDIVIDUAL INVESTIGATOR
AGREEMENT

Part 1 AGREEMENT INFORMATION

This DoD Individual Investigator Agreement describes the responsibilities of the individual researcher who is engaged in human subject research, not an employee of the assured institution, and is associated with the assured institution for the purpose of conducting research. This Agreement also describes the responsibilities of the assured institution. This Agreement, when signed, becomes part of the engaged institution's Federal Assurance for the Protection of Human Research Subjects approved by DoD (and may become part of the Federalwide Assurance (FWA) approved by the Department of Health and Human Services (DHHS)).

A. Name of Investigator:

B. Institution with the Assurance

Name: U.S. Army Research Institute for the Behavioral and Social Sciences

DoD Assurance Number: A20127

DHHS FWA Number [if applicable]: NA

Assurance Expiration Date: 1 August 2016

C. Scope

____ This Agreement applies to all research performed by this investigator in collaboration with the institution with the assurance, unless specified below.

____ This Agreement is applicable only to the research listed in this Agreement and does not apply to other research in which the investigator may be involved. (*List titles and other identifying information.*)

D. Effective Date

This Agreement is effective as of the date signed by the DoD Component Designated Official, and expires at the conclusion of the research defined in Part 1C or on the date listed in the DoD approval document.

Part 2 INVESTIGATOR RESPONSIBILITIES

As the Investigator named in Part 1A above, I:

A. Have reviewed: a) *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*; b) the U.S. Department of Defense (DoD) regulations for the protection of human subjects at 32 Code of Federal Regulations, Part 219 (32 CFR 219) and DoD Instruction 3216.02; c) the assurance of the institution referenced above; d) the DoD Component policies identified in Part 3 of the DoD Assurance (if applicable); and e) the relevant institutional policies and procedures for the protection of human subjects.

- B. Understand and accept the responsibility to comply with the standards and requirements stipulated in the above documents and to protect the rights and welfare of human subjects involved in research conducted under this Agreement.
- C. Will comply with all other applicable federal, DoD, international, state, and local laws, regulations, and policies that provide protections for human subjects participating in research conducted under this Agreement.
- D. Will complete any education and training required by the institution and the Institutional Review Board(s) (IRB) prior to initiating research covered under this Agreement (attach documentation).
- E. Will abide by all determinations of the IRB designated under the institution's assurance and will accept the final authority and decisions of the IRB, including but not limited to directives to terminate my participation in designated research activities.
- F. Will not enroll subjects or engage in research activities under this Agreement prior to the protocol review and approval by the IRB and the institution.
- G. Will comply with requirements from the IRB when responsible for enrolling subjects, to include obtaining, documenting, and maintaining records of informed consent for each such subject or each subject's legally authorized representative as required under DoD regulations at 32 CFR 219.
- H. Acknowledge and agree to cooperate with the IRB for initial and continuing review, report for the research referenced above, and provide all information requested by the IRB or institution in a timely fashion.
- I. Will seek prior IRB review and approval for all proposed changes in the research except where necessary to eliminate apparent immediate hazards to subjects or others.
- J. Will report immediately to the IRB: a) unanticipated problems involving risks to subjects or others and b) serious or continuing non-compliance.
- K. Will comply with recordkeeping requirements for research protocols referenced above.
- L. Will make all other notifications as specified by the IRB and the institution.
- M. Acknowledge my primary responsibility for safeguarding the rights and welfare of each research subject, and that the subject's rights and welfare will take precedence over the goals and requirements of the research.

Part 3

ASSURED INSTITUTION'S RESPONSIBILITIES

This institution will apply the terms of its assurance to the Investigator and the research as specified in the Scope of this Agreement, Part 1.

Part 4

AGREEMENT BETWEEN AN INVESTIGATOR AND AN ASSURED INSTITUTION

The investigator, the investigator's employer, or an official of the assured institution may unilaterally terminate this agreement upon written notification to other signatories.

Investigator:

I understand my responsibilities as described in this Agreement and the policies referenced in Part 2A above. I acknowledge and accept my responsibility for protecting the rights and welfare of human research subjects and for complying with all applicable provisions of the institution's assurance.

Signature:

Date:

Name:

Rank/Grade/Position:

Institutional Title:

Telephone number:

Date of last Citi training:

FAX number:

Email address:

Mailing Address:

Acknowledgement by Investigator's Employer (or DoD Supervisor if DoD Employee)

I am aware that my employee is entering into this agreement.

Signature:

Date:

Name:

Rank/Grade/Postion:

Institutional Title:

Telephone number:

FAX number:

Email address:

Mailing Address:

C. Acknowledgement by Investigator's Sponsoring Unit Chief

Acting in an authorized capacity on behalf of this institution and with an understanding of the institution's responsibilities under the institution's assurance, I will provide oversight of the Investigator and the research conducted under this Agreement.

Signature:

Date:

Name:
Rank/Grade/Position:
Institutional Title: U.S. Army Research Institute
Telephone number:
FAX number:
Email address:
Mailing Address:

D. Institutional Official of the Assured Institution

Acting in an authorized capacity on behalf of this institution and with an understanding of the institution's responsibilities under the institution's assurance, I am aware that this individual is involved in our project and approve this research.

Signature:

Date:

Name: Michelle Sams
Rank/Grade: Director (SES)
Institutional Title: U.S. Army Research Institute
Telephone number: 703-545-2324
FAX number: 703-806-2151
Email address: michelle.r.sams.civ@mail.mil
Mailing Address: 6000 6th Street, FT Belvoir, VA 22060-5610

APPENDIX B: ACHIEVEMENT TEST A

Test A

ARI Subject Number: _____ IMI Version L ___ D___

Instructions: Place an X in the space provided for your answer selection(s). Please refrain from guessing - if you don't know, pick that option.

1. When assessing your personal strengths and weaknesses, it may be useful to gather documents such as Army physical fitness tests, field performance evaluations done at combat training centers, counseling sessions, inspection results, etc. Once you have gathered these materials, an effective way to develop an honest self-assessment is to:

- _____ A. Compile the information by taking notes in a document or spreadsheet.
- B. Compare the documents to identify information in common among them.
- _____ C. Identify information that reflects your skill and professionalism as an Army NCO.
- _____ D. I don't know.

2. How can observations of your supervisor(s) be used to gain a better understanding of your skills, strengths, and weaknesses? (Select all that apply.)

- A. Identifying the types of tasks delegated to you compared to others.
- _____ B. Determining who your supervisor prefers to socialize with.
- _____ C. Documenting the types of feedback your supervisor prefers.
- _____ D. I don't know.

3. When seeking information, finding learning experiences, and locating the proper learning resources, which of the below listed techniques should you use to assure success? (Select all that apply.)

- _____ A. Use only resources recommended by my supervisor.
- B. Seek opportunities to learn things hands-on.
- C. Keep a list to track resources you have reviewed.
- _____ D. I don't know

4. What do you consider when choosing learning resources? (Select all that apply.)

- A. Time that you have available for learning activities
- _____ B. Cost of the source material in commercial book stores and on-line
- C. Availability and accessibility of the source
- D. Recommendations by civilian teachers, professors, and subject matter experts
- _____ E. I don't know

5. Learning on your own requires time. Which of the options below are effective ways to manage your work, time, and personal life to optimize time available for self-development and self-learning? (Select all that apply.)

- A. Taking care of yourself by eating right, exercising, and resting.
- B. Look for efficient ways to accomplish routine tasks.
- C. Organize your workspace and living area to make it possible to find what you need when you need it.
- D. Set a daily time to deal with unexpected problems and keep to a strict schedule.
- E. I don't know.

6. Next quarter, you need to train your unit on a new piece of chemical hazard detection and early warning equipment. The Soldiers will need to know how to put the equipment into operation, how to employ it, take it out of operation, and maintain it. The equipment is something that you have never used before. How would you begin planning for your learning task? (Select all that apply.)

- A. Clearly define what you need to learn.
- B. Plan step-by-step what you need to do in working toward my learning goals.
- C. Prioritize your learning tasks and/or topics that need to be covered.
- D. Develop a list of milestones and use it to track your learning progress.
- E. I don't know.

7. When you are learning on your own, it is good to check if you have learned what you intended to learn. There are a number of ways to do this. Select all of the techniques listed below that are viable ways to check on your learning. (Select all that apply.)

- A. Talk through what you have learned with an experienced peer, a subject matter expert, or a mentor.
- B. Demonstrate or teach your new knowledge and skills to subordinates, associates, or superiors.
- C. Review your notes to ensure they are complete and accurate.
- D. Reflect on the knowledge and use it in a collaborative problem solving situation.
- E. I don't know.

8. There are a number of techniques that you can apply when you realize you do not understand something during the learning process. Select from the list below viable techniques to make sense of something you do not understand. (Select all that apply.)

- A. Seek out different alternatives/points-of-view on the topic.
- B. Focus on a single "best" source of information for the topic.

C. Seek opportunities to teach/explain to others what you have learned.

D. Summarize what you are learning in your own words.

E. I don't know.

9. Assessments and evaluations are different. From the following list, select ALL of the events or actions that are typically assessments. (Select all that apply.)

A. A pre-inspection

B. An annual NCOER

C. Exams during a course

D. A diagnostic Army Physical Fitness Test (APFT)

E. I don't know.

10. An important aspect of "sense making" is to verify that the knowledge and skills that you have acquired through self-learning are proper, correct, valid, and safe. Select the techniques listed below that would assist and support you in this verification process. (Select all that apply.)

A. Study multiple, varied source documents and resources.

B. Consult with subject matter experts (SMEs) and recognized, accomplished professionals in the field.

C. Find information from one published source or author.

D. Conduct periodic self-testing or coordinate for examination by peers or superiors.

E. I don't know.

APPENDIX C: ACHIEVEMENT TEST B

Achievement Test Version B

ARI Subject Number: _____ IMI Version L ___ D_____

-----Instructions: Place an X in the space provided for your answer selection(s). Please refrain from guessing - if you don't know, pick that option.

1. As a Soldier, what criteria should guide your efforts in identifying and selecting resources that will support your self-learning effort? (Select all that apply.)

- A. Time that you have available for learning
- B. Retail cost and return/resale value of the books, courseware, or courses
- C. Availability and accessibility of resources and materials
- D. Frequent and early appearance in the lists provided by web based search engines
- E. I don't know

2. From the source categories listed below, identify the generally accepted categories of sources of information that support self-learning. (Select all that apply.)

- A. People – such as peers, supervisors and mentors, subject matter experts, and teachers
- B. Web search engines – such as Google™, Yahoo®, Bing™, Ask, etc.
- C. Courses and courseware – including classes, courses, distance learning, eLearning, and correspondence courses
- D. Books and references – including military field and technical manuals, articles in professional or trade journals, and volumes from electronic and traditional libraries
- E. I don't know

3. Assessments and evaluations are different. From the following list, select ALL of the events or actions that are typically assessments. (Select all that apply.)

- A. An annual NCOER
- B. A diagnostic Army Physical Fitness Test (APFT)
- C. A periodic counselling
- D. A promotion board
- E. I don't know.

4. After self-learning a new skill but prior to using it on the job or in a live environment, you should practice or rehearse what you have learned. Identify the “sense making” techniques listed below that could be used in this effort. (Select all that apply.)

- A. Review your notes to ensure that they are complete and accurate.

- B. Think through the conditions that may be factors such as time, distance, and the available or required resources.
- C. Use a diagram that you have developed to walk through the required sequence and procedures.
- D. Conduct “what-if” scenarios considering different aspects of the task and review potential problems, impediments, and challenges.
- E. I don’t know.

5. Learning on your own requires time. Which of the options below are effective ways to manage your work, time, and personal life to optimize time available for self-development and self-learning? (Select all that apply.)

- A. Keep a strict schedule; set aside time daily to deal with unexpected problems.
- B. Take care of yourself; eat right, exercise, and rest.
- C. Look for efficient ways to accomplish routine tasks.
- D. Organize your workspace and living area to make it possible to find what you need when you need it.
- E. I don’t know.

6. Documents from your official, unit, or personal records can be useful when developing a self-assessment. These documents may include but are not limited to physical fitness tests, field performance evaluations done at combat training centers, counseling sessions, NCOERs, and inspection results. Once you have these documents and materials, what is an effective way to develop an honest self-assessment?

- A. Identify all entries that reflect positively on your skill and professionalism as an Army NCO.
- B. Compile the information in a single spreadsheet grouping like documents.
- C. Compare the documents to identify information that is common among them.
- D. I don’t know.

7. How can observations of your supervisor(s) be used to gain a better understanding of your skills, strengths, and weaknesses? (Select all that apply.)

- A. Determining who your supervisor prefers to socialize with.
- B. Determining the situations when your advice or recommendations are requested.
- C. Identifying the types of tasks delegated to you compared to others.
- D. I don’t know.

8. Planning for self-learning is much like planning any type of military operation. Military operations have objectives, learning plans have goals. From the list below identify the

characteristics that should be considered when developing effective learning goals and milestones. (Select all that apply.)

- A. Learning goals should be linked to a timeframe to assure both a sense of urgency and a sense of accomplishment.
- B. Learning goals should require you to stretch yourself and sacrifice; they must be the most important aspect of your life and military career.
- C. Learning goals should be relevant to your work, current or anticipated duties, and your success or the success of your unit.
- D. Learning goals should set specific objectives and may be associated with time, scores, accuracy, or performance standards.
- E. I don't know.

9. When you are learning on your own, you need to establish ways and means to determine if you have learned what you intended to learn. There are a number of ways to do this. Select all of the techniques listed below that are viable ways to check on your learning. (Select all that apply.)

- A. Review your notes for accuracy and assure that you have accurately recorded the resources and literature used in your learning.
- B. Talk through what you have learned with an experienced peer, a subject matter expert, or a mentor.
- C. Demonstrate or teach your new knowledge and skills to subordinates, associates, or superiors.
- D. Reflect on the knowledge and use it in a collaborative problem solving situation.
- E. I don't know.

10. A key element of learning is assuring that you understand what you are learning in the appropriate context. There are a number of techniques that can assist you in this verification process to assure that you correctly understand. Select from the list below viable techniques to make sense of something you do not understand. (Select all that apply.)

- A. Seek opportunities to teach/explain to others what you have learned.
- B. Summarize what you are learning in your own words.
- C. Seek out different alternatives/points-of-view on the topic.
- D. Focus on a single "best" source of information for the topic.
- E. I don't know.

Appendix: CBT Rating Questionnaire

INSTRUCTIONS: Please indicate the degree to which you are in agreement with each of the statements below.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
(Quality of Learning Experience)					
1. I would recommend that this IMI be made available to all junior NCOs.					
2. I would use this IMI to refresh my skills at a later date.					
3. I feel I have a better understanding of the task after completing the IMI.					
4. I preferred this IMI to others I have used in the past.					
5. The IMI interactively helped my learning process.					
6. On the basis of this IMI, I could execute the task as a combat leader.					
7. I feel this IMI was able to meet my individual learning needs.					
(Quality of Design and Content)					
8. The displays on the screen were clear and legible.					
9. The graphics supported the material being presented.					
10. Prompts and cues in the IMI assisted me in navigating through the material.					
11. The information presented seemed accurate and doctrinally correct.					
12. I felt like I was in control of my learning process.					
13. The information presented seemed up-to-date.					
14. I could easily track where I was in the IMI.					
15. Uniforms, practices, and equipment were up to date.					
(Continuity of Topics)					
16. There was a good connection between the topics.					
17. The sequence of topics seemed to build on each other.					

18. IMI content was grouped to facilitate learning.					
19. There was a clear focus of topics in the IMI.					
20. Grouping of content allowed me flexibility in accessing material.					
(Credible Examples)					
21. Examples contributed to my learning.					
22. The examples made sense.					
23. I learned a lot about the task from the examples.					
24. Examples were presented in a realistic mission context.					
25. Repetition of examples was helpful.					
(Focus and Relevance)					
26. Sections of the IMI were of the right length to allow me to complete them without needing a break.					
27. Questions asked within the IMI were reasonable and helped me to understand the topic.					
28. The questions asked within the IMI focused on what was being taught.					
29. The overall focus of the IMI was right on target.					
(Tracking Progress)					
30. If I took a break during the learning process, I could easily resume learning when I returned.					
31. I would be able to take breaks during the learning process and keep track of my progress.					

Recommendations to Improve the IMI

INSTRUCTIONS: Given the questions we asked above, please consider the items you rated lowest when answering the following questions.

(1) If you could make specific changes to the content or design of this IMI to improve your learning experience, what would they be?

(2) In what ways could the course be modified to improve it for your fellow NCOs and subordinates?

Thank you for your participation.
This concludes our data collection.

APPENDIX D: DEMOGRAPHIC SURVEY FOR NCO SELF-LEARNING IMI

Date: _____ ARI Subject Number: _____

1. Rank: _____ 2. Age: (years) _____
 3. Time in Service (months): _____ 4. Time in Grade (months): _____
 5. MOS: _____ 6. Component: _____ A. Regular Army
 _____ B. Army National Guard
 _____ C. Army Reserve
 7. Current Duty Assignment: (e.i. Squad Member; Team Leader; Section Sergeant, etc.) _____ 7.A. How long (months): _____
 8. Immediate Previous Duty Assignment: _____ 8.A. How long (months): _____
 9. If you recently experienced an MOS reclassification, what was your previous MOS? _____
 Deployments:
 10. Have you been deployed? ___ YES ___ NO
 10.A. If yes, number of times: _____ 10.B. Total months deployed: _____
 Self-Perspective/ Self-Assessment:
 11. Compare yourself to your peers (check one): Ahead: ___ With: ___ Behind: ___

Civilian Employment History and Experience:

12. Last Civilian Job: _____ (if none, state NONE); how long (months): _____
 13. Prior Civilian Job: _____ (if none, state NONE); how long (months): _____
 14. Did you receive any training (other than orientation or guided supervision) from your employer for a previous civilian job? YES: ___ NO: ___
 14.A. If yes, briefly describe the training received: _____

Civilian Education History and Experience: (Place an X in the appropriate blanks)

15. High School
 ___ A. Not yet a High School or GED graduate
 ___ B. Graduated High School
 ___ C. Completed requirements for a GED
 16. Trade School: _____
 16.A. (List occupational skill and level(s) attained): _____

17. Civilian Higher Education and Learning Experiences: Collage and Professional Degrees:
 (Place an X in the appropriate blank of the highest degree and/or hours/credits attained)

A. Some college credits – no degree _____	B. Associate/Two-year Degree _____	C. Some credits beyond Associate/Two-year Degree _____
D. Bachelor’s Degree _____	E. Some credits beyond Bachelor’s Degree _____	F. Master’s Degree _____
G. Some credits beyond Master’s Degree _____	H. Some credits toward a Professional Degree _____	I. Professional Degree _____

18. If you hold or are pursuing an Associate, College, or Professional Degree, state the Degree, field of endeavor, or study: (If no Degree is held or being pursued, state NONE.)

19. Approximately how much time do you spend working on other (not Army related) college, online, or distributed learning courses each week (both on and off duty)?

- A. None
- B. 1-5 hours
- C. 6-10 hours
- D. 11-15 hours
- E. More than 15

Professional Military Education Experience:

20. Structured Self-Development (SSD) and Noncommissioned Officer Education System (NCOES)

(Place an X in blank of the highest level of the NCOES completed.)

A. Completed SSD Level I _____	B. Completed Basic Leaders Course (BLC)/Warrior Leaders Course (WLC) _____	C. Completed Advanced Leader Course (ALC) Common Core _____
D. Completed ALC _____	E. Completed SSD Level III _____	F. Completed Senior Leaders Course (SLC) _____
G. Completed SSD Level IV _____	H. Completed the Sergeants Major Course _____	I. Completed SSD Level V _____

21. How long has it been since you completed your last NCOES course?

(Place an X in the appropriate blank.)

- A. None completed.
- B. Less than 1 year
- C. At least 1 year, but less than 2 years
- D. At least 2 years, but less than 3 years
- E. At least 3 years, but less than 4 years
- F. 4 years or more

Army e-Learning and Distributed Learning (dL) Experiences:

The Army's e-Learning Environment provides access to courses in Information Technology, project management, business, leadership skills, and other subjects.

22. List the three (3) most recent e-Learning/dL certifications or completion certificates that you have attained earned through Army e-Learning: (If none, state NONE on line A.)

- A. _____
- B. _____
- C. _____

23. During a typical month in the past year, about how many hours by category did you dedicate to e-Learning/dL both on and off-duty?

- A. Mandatory or directed training

- _____ B. New equipment or new systems training
- _____ C. MOS or job specific training
- _____ D. Pre-deployment training
- _____ E. Professional military education courses (e.i. SSD)
- _____ F. Courses or subjects that I selected for self-development
- _____ G. Place an X here if you took no e-Learning or dL classes in the past year.

24. Rank order the following factors that motivate you the MOST to seek out and complete e-Learning, dL, or online courses, with 1 being the MOST important motivating factor and 6 being the LEAST important motivating factor.

- _____ A. Professional development
- _____ B. Promotion potential
- _____ C. Improving my ability to do my job (technical and tactical)
- _____ D. Personal desire to learn or improve
- _____ E. Future job potential once I transition out of the Army
- _____ F. Mandated/ordered to complete
- _____ G. Place an X here if you took no e-Learning or dL classes in the past year.

Distractions to Self-Learning

25. There are many aspects of life that have the potential to negatively impact the time available for self-development and self-learning. In the table below identify the three (3) top items that are or become distractors when you are trying to focus on reading, study, course work, or other self-learning activities. Additionally, write in any omitted distractors that impact you in the OTHER blocks and rank them appropriately. (Inter 1 through 3 in the appropriate blocks with 1 being the greatest distracter.)

A. Primary duties in my unit _____	B. Additional duties in my unit _____	C. Family obligations _____
D. Social activities with friends or family _____	E. Social media updating or viewing _____	F. Electronic gaming _____
G. Watching television _____	H. Playing sports _____	I. Exercising/body building _____
J. Hunting or fishing _____	K. Volunteer or service work _____	L. Hobbies (list) _____ (rank) ____; _____ (rank) ____
M. Other _____ (rank) _____	N. Other _____ (rank) _____	O. Other _____ (rank) _____

APPENDIX E: NASA- TASK LOAD INDEX
NASA Task Load Index

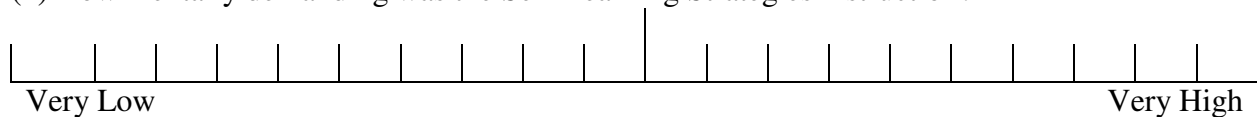
INSTRUCTIONS: This questionnaire measures the level of workload you experienced when completing the Self-Learning Strategies IMI.

(1) How important were each of the following factors in contributing to the workload you experienced when completing the Self-Learning Strategies IMI?

	Not Important	Somewhat Important	Important	Very Important	Essential
(a) Mental Demands					
(b) Physical Demands					
(c) Time Demands					
(d) Performance/Success					
(e) Effort/How Hard You Worked					
(f) Frustration with the Task					

For the next set of items, please circle the tick mark on the scale that most closely reflects your response:

(2) How mentally demanding was the Self-Learning Strategies instruction?



(3) How physically demanding was the Self-Learning Strategies instruction?



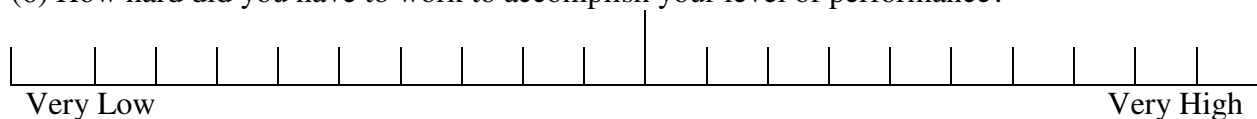
(4) How hurried or rushed was the pace of the Self-Learning Strategies instruction?



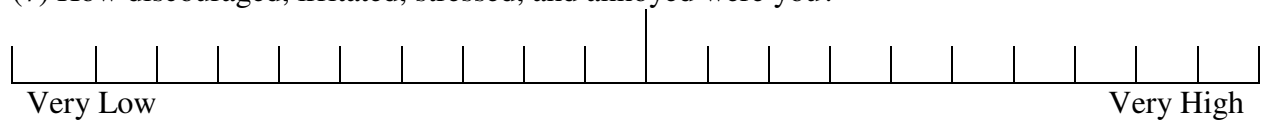
(5) How successful were you in accomplishing what you were asked to do?



(6) How hard did you have to work to accomplish your level of performance?



(7) How discouraged, irritated, stressed, and annoyed were you?



APPENDIX F: MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE
(MSQL):MODIFIED

Self-Regulation Questionnaire

INSTRUCTIONS: On the scale below, please indicate the degree to which you are in agreement with the following statements.

(RS = reverse scored items)

(Self-Regulation Items)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1. I ask myself questions to make sure I know the material I have been studying.					
2. When work is hard I either give up (RS) or study only the easy parts.					
3. I work on practice exercises and answer end of chapter questions even when I don't have to.					
4. Even when study materials are dull and uninteresting, I keep working until I finish.					
5. Before I begin studying I think about the things I will need to do to learn.					
6. I often find that I have been (RS) reading for a class but don't know what it is all about.					
7. I find that when the instructor is (RS) talking I think of other things and don't really listen to what is being said.					
8. When I'm reading I stop once in a while and go over what I have read.					
9. I work hard to learn even when I don't like the subject matter.					

(Cognitive Strategy Use Items)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1. When I study, I try to put together information from different sources.					
2. It is hard for me to determine the (RS) main ideas in what I read.					

3.	When I study, I put important ideas in my own words.					
4.	I try to understand even when something doesn't make sense.					
5.	When preparing for a test I try to remember as many facts as I can.					
6.	When studying, I copy my notes over to help me remember material.					
7.	When I study, I say the important facts over and over to myself.					
8.	I use what I have learned in the past to help me learn new material.					
9.	When I am studying, I try to make everything fit together.					
10.	When I read material, I try to say the words over and over to myself to help me remember.					
11.	I develop outlines to help me study.					
12.	When reading, I connect things I am reading about to what I already know.					

(Self-Efficacy)

		Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1.	Compared to other NCOs, I expect to do well.					
2.	I'm certain I can understand the material being taught today.					
3.	I expect to do very well in learning about this material.					
4.	I am sure I can do an excellent job on the types of problems and tasks described in this course.					
5.	I know I will be able to learn the material for this course.					

(Intrinsic Value)

		Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

1.	I prefer work that is challenging so I can learn new things.					
2.	It is important for me to learn the material being taught.					
3.	I think I will be able to use what I learn here in other situations.					
4.	I think what I am learning will be useful in other courses.					
5.	Understanding this subject is important to me.					

APPENDIX G: STORY BOARDS - A LEG UP ON SELF-LEARNING: STRATEGIES FOR SUCCESS: MODULE 1: INTRODUCTION

Course: Strategies for Self-Learning

File Name: Intro to Self-Learning

Section: SL_1_001


Page Title: SL_1_001

Version: 0.1


Instructional Designer: SMC

Art Director: Multimedia Developer

A Leg Up on Self-Learning: Strategies for Success



Purpose: This lesson provides NCOs with tools, techniques, and strategies to support successful self-learning.



The Army Training and Leader Development Model

On Screen Treatments

Open with the title and the "modern cavalryman (with caption) being assisted onto his horse. At PAUSE decrease size and fade left as the Army T&LD Model is displayed right.

NEXT go to SL_1_002

Navigation:

Graphics:

Animation:

Audio:

Video:

Functionality:

Interactivity:

Hyperlinks:

Narration: Welcome to the lesson entitled a Leg Up on Self- Learning: Strategies for Success. The lesson and its resources are designed, as the title implies, to give you a leg up, a boost into the saddle in support of your ongoing and future self-learning opportunities. (PAUSE) To begin, examine the Army’s Training and Leader Development Model. Leader training and development occurs within the frame work of the Army’s culture - a culture composed of Army values and ethics, the Warrior Ethos, standards, and enduring principles and imperatives. The three distinct but related training domains lay at the center of this model; they are institutional, operational, and self development. This lesson focuses on the self development domain, specifically the self-learning aspects of self development.

Course: Strategies for Self-Learning
 File Name: Intro to Self-Learning
 Sector: SL_1_002
 Page Title: SL_1_002
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Your Self Development

Types of Self Development:

- **Structured Self-Development (SSD)** is required learning that is continuous throughout your career. For example, Army SSD for NCOs consists of five levels of mandatory development.
- **Guided Self-Development (GSD)** is recommended but optional learning that will help keep you prepared for changing technical, functional, and leadership responsibilities throughout your career.
- **Personal Self-Development** is self-initiated learning where you define the objective, pace, and process of learning.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments
 Open with the Army T&LD Model. At the PAUSE 1 zoom out the SELF DEVELOPMENT circle (with S&O intrusions). At PAUSE 2 drop in the on screen text – **Types of Self Development.**

NEXT go to SL_1_003.
 BACK go to SL_1_001

2

Narration: Self development both complements and supplements the training and instruction that you receive in schools and institutions as well as the training and experiences that you encounter in units and operational assignments. (PAUSE 1) Self development can never be fully separated from institutional instruction and operational training and experiences since self development draws from and supports these complementary domains. To achieve your personal and professional goals, you must supplement institutional and organizational training and education through continuous, planned self development. (PAUSE 2) There are three types of self development – structured, guided, and personal development. Self-learning is a key aspect of lifelong learning and occurs in all three types of self development.

Course: Strategies for Self-Learning

Instructional Designer:

File Name:
Section: Intro to Self-Learning
Page Title: SL_I_004
Version: 0.3

SMB:
Art Director:
Multimedia Developer:

Sound Advice for Your Future and Success in the Army



"... I don't know anything about the job you're heading to, but I do know a few things. If you don't know the job, then learn it. If they can't tell you what the job is, then you figure it out and then tell **them** what the job is. Don't wait for someone to teach you. Learn the job and keep learning. Never stop. You never know what you might need to get the mission accomplished."

"Remember, if it was easy, then they wouldn't give it to an NCO." – **Anonymous BN CSM**

Today's NCO: Adaptive and Continual Learners by First Sergeant (Retired) Cameron Wesson, *NCO Journal*, February 6, 2014

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open with the title and image. At [use live male voice] insert the quote on the screen with the reference to the NCO Journal.

NEXT go to SL_I_004.
BACK go to SL_I_002.

Narration: Now, . . . it is easy to talk about self development, but what is your approach to it. What do you plan to achieve, how do you plan to accomplish your self-learning and self development, what are your goals? Listen to this practical guidance provided by a battalion command sergeant major to a subordinate departing for new duties. It is sound advice for many situations in the Army today: (use live male voice) "... I don't know anything about the job you're heading to, but I do know a few things. If you don't know the job, then learn it. If they can't tell you what the job is, then you figure it out and then tell *them* what the job is. Don't wait for someone to teach you. Learn the job and keep learning. Never stop. You never know what you might need to get the mission accomplished. . . . Remember, if it was easy, then they wouldn't give it to an NCO !"

Course: Strategies for Self-Learning

File Name:
Sector: Intro to Self-Learning
Page Title: SL_I_004
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

What About Your Self-Learning



Self-learning will support you in a successful Army career, but do you understand how you operate as a learner?

- What should you learn?
- How do you set and track your learning goals?
- What techniques work best for you?
- Are you more structured or freewheeling when learning?
- How do you find the most useful learning resources?
- How is your current approach to learning working for you?
- How do you evaluate yourself honestly to find ways to improve?

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open with image on the screen. At the PAUSE insert the onscreen text.

NEXT go to SL_I_005
BACK go to SL_I_003

Narration: While it is easy to agree that self-learning is important to your future and career, how do you manage and conduct your self-learning now? Are you making progress? Are you satisfied with your progress? Consider the questions listed. (PAUSE) Are you satisfied with your answers? The modules of this lesson are organized to provide you with self-learning techniques and strategies. These strategies are derived from the feedback from a group of over 1,300 successful NCOs. These are the strategies that they shared, the strategies that they said helped them to be successful in their self-learning. In the modules of this lesson you will be able to assess your attitude toward and agreement with these learning strategies.

Course: Strategies for Self-Learning
 File Name: Intro to Self-Learning
 Section: SL_I_005
 Page Title: SL_I_005
 Version: 0.1

Instructional Designer: SME: Art Director: Multimedia Developer:

Use a display data as a vertical bar graph with a red arrow positioned for the students score.

Sample of a Learning Strategy Assessment

DATE: _____

Rank			
	SGT	SSG to SFC	MSG/1SG >
1			
2			
3			
4			
5			

Career Management Field			
	Combat Arms	Combat Support	Combat Service Support
1			
2			
3			
4			
5			

Civilian Education			
	GED/H.S.	Some College	College Degree
1			
2			
3			
4			
5			

Time in Service (years)			
	0 to 5	5 to 10	10 +
1			
2			
3			
4			
5			

Your Score

PRINT

SAVE

On Screen Treatments
 Open with model graphic displayed. At the "Flash the Red Arrow" cue flash the model arrow. Print and Save button should be inactive, use 2.5 as the student score and display today's date.
 NEXT go to SL_I_006
 BACK go to SL_I_004

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

Narration: The results of your ratings will then be compared with those expressed by your peers, seniors, and subordinates. This display will show your ratings ranked with those of your fellow N C Os. You can compare (Flash the Red arrows) your ratings by rank, career management field, civilian education, and time in service. You can print or save the results for future comparisons. If your ratings are lower than your peers, you may have some work to do. The time and effort you are dedicating to learning activities may not be achieving the results that you desire. If you rate higher than your peers, you may have some strengths that you can build on. Each module will describe and explain these strategies and show techniques that can be used to improve your self-learning. These proven strategies will assist in improved learning efficiencies and may assist in calibrating your attitude toward aspects of self-learning.

Course: Strategies for Self-Learning
 File Name:
 Section: Intro to Self-Learning
 Page Title: SL_I_008
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Using and Sharing What You Learn



Benefit to your self development and career through improved learning skills.



Benefit to your subordinates and peers through sharing what you learn.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Open the left and right images with captions. Midway through the narration show the water drop with expanding rings/waves in the background.

NEXT go to SL_I_007
 BACK go to SL_I_005

Narration: You are the target of this training, and your knowledge and skills should benefit from your improved self-learning skills. However, as a professional N C O and leader you will be better equipped to provide recommendations and guidance to your Soldiers to improve their learning and self development skills. As you master these strategies and see the improvement, you should share these techniques and strategies with subordinates, peers, and even your superiors.

Course: Strategies for Self-Learning
 File Name:
 Section: Intro to Self-Learning
 Page Title: SL_I_007
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Providing Guidance and Advice for Your Self-Learning



Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Stills of mentors talking with Soldiers.

NEXT go to SL_I_008
 BACK go to SL_I_006

Narration: A key component of self-learning is your support network. Your self-learning network may include supervisors, experienced peers, other senior NCOs, professors, and teachers, anyone who takes an interest in your development and success. No doubt, you have already received advice, guidance, or counseling in your career. A characteristic of our Army is that good leaders are interested and involved in the development, wellbeing, and success of their subordinates. This is especially true when subordinates show initiative and promise as future leaders. To guide you in this lesson, you may select a mentor, a virtual model of a successful NCO. This virtual mentor will guide you through the scenarios and may intervene at times to provide emphasis or discuss key points in training.

Course: Strategies for Self-Learning

File Name: Intro to Self-Learning
Section: SL_I_008
Page Title: SL_I_008
Version: 0.1

Instructional Designer: SAE
Art Director: Multimedia Developer

Selecting Your Virtual Mentor

Mouse over the picture of each mentor to read the biography, then select the "My Mentor" button to be guided by this virtual mentor during training.

My Mentor

Miller
MSG Lisa Miller

Coats
MSG Will Coats

Deer
SFC Mike Deer

Display the full length mentor image and brief biography in this space.

On Screen Treatments
 Mouse-over Miller display SL_I_008_A (9); mouse-over Coats, display SL_I_008_B (10); mouse-over Deer, display SL_I_008_C (11). Select Miller, use MSG Miller as mentor; select Coats, use MSG Coats as mentor; select Deer, use SFC Deer as mentor. When a My Mentor button is selected, advance to SL_I_012. If NEXT is selected make SFC Deer the mentor and advance to SL_I_013. Mentor image and voice should be consistent through the remainder of training for the successor.

NEXT go to SL_I_012
BACK go to SL_I_007

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

Narration: The available virtual mentors are depicted. Mouse over the pictures to view a brief biography of each of these senior NCOs. Select the My Mentor button adjacent to the senior NCO's picture that seems to be the most appropriate for or compatible with you. If you choose not to select a mentor, select NEXT and a virtual NCO will be assigned to assist you in training.

{IN THE PICTURE, 'DEER' IS SPELLED WITH ONLY TWO E's.}

Course: Strategies for Self-Learning

File Name:
Section: Intro to Self-Learning
Page Title: SL_1_008_4
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:



MSG Lisa G. Miller

MSG (P) Lisa Miller is currently serving as the Operations Sergeant Major of a Brigade Support Battalion (BSB), supporting an Armored Brigade Combat Team (ABCT). During her most recent combat deployment, she served as the First Sergeant of a Distribution Company in a BSB supporting operations in a SBCT area of responsibility of over 1,000 square miles. She was an Honor Graduate of the Sergeants Major Course and holds a Bachelor of Science Degree in Logistics Management.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

When MSG Miller's image receives a mouse-over on frame SL_1_008, display the above image and biography on the space provided in frame SL_1_008.

1

Course: Strategies for Self-Learning

File Name:
Section: Intro to Self-Learning
Page Title: SL_1_008_9
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:



MSG William W. Coats

MSG Will Coats is currently serving as the Plans and Training Sergeant in the G3 of a Heavy Corps. During his most recent combat deployment, he served as the First Sergeant of a cavalry troop engaged in Stability Operations and the training of indigenous police and armed forces in a remote region. He has been selected for resident attendance at the Sergeants Major Course. He holds an Associate Degree in Business Management and is projected to graduate with a BS Degree in Business Administration just prior to attending the Sergeants Major Course.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

When MSG Coats's image receives a mouse-over on frame SL_1_008, display the above image and biography on the space provided in frame SL_1_008.

10

Course: Strategies for Self-Learning
 File Name: Intro to Self-Learning
 Section: SL_I_008_C
 Page Title: SL_I_008_C
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:



SFC Michael A. Deer

SFC (P) Mike Deer is currently serving as the First Sergeant of a Basic Training Company having just completed 14 months as a Senior Drill Sergeant. Prior to his assignment as a Drill Sergeant, he served as the Senior Trainer on a Military Transition Team (MITT) for an executive protection detachment. He holds an Associate Degree in Political Science and speaks both Modern Standard Arabic and Hebrew. He is an Honor Graduate of the Battle Staff NCO Course and earlier in his career he was a successful walk-on for the All Army Military Pentathlon Team.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

When SFC Deere's image receives a mouse-over on frame SL_I_008, display the above image and biography on the space provided in frame SL_I_008.

11

Course: Strategies for Self-Learning
 File Name: Intro to Self-Learning
 Section: SL_I_013
 Page Title: SL_I_013
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

NOTE: This page is the main navigation page to access the modules!

Examining Self-Learning Strategies

Select each module to learn more about strategies to support your self-learning. After you have examined each of the modules, select Next to continue.

Numbers in Blue are provided for reference ONLY do NOT display!

- 1
- 2
- 3
- 4
- 5

- Determine learning strengths and impediments** – How to assess, gain feedback, and identify strengths and weaknesses.
- Develop a learning plan** – How to analyze your learning needs, develop goals, and create a workable timeline and plan.
- Find learning resources and opportunities** – How and where to get the right materials and do the right things to learn.
- Make sense of your learning** – How to make the most out of learning opportunities and make new knowledge and skills useful.
- Evaluate learning progress** – How to gauge progress, troubleshoot problems, and make adjustments.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

BLUE numbers are for reference only! Do not display.
 If 1 is selected go to SL_AM_001. If 2 is selected go to SL_PA_001.
 If 3 is selected go to SL_IS_001. If 4 is selected go to SL_SM_001.
 If 5 is selected go to SL_EL_001. Provide a visited state; place a ✓ on the blocks selected. Do not play narration on revisit.

NEXT go to SL_I_013
 BACK go to SL_I_008

11

Narration: This lesson is organized with five primary instructional modules. Select each module to learn more about related strategies. If this is your first time using this lesson, it is recommended that you complete the modules in order, beginning at the top. After you have completed each of these modules and explored the related strategies, select Next to continue.

Course: Strategies for Self-Learning
 File Name:
 Section: Intro to Self-Learning
 Page Title: SL_I_013
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Self-Learning Resources

The diagram consists of three overlapping circles. The top circle is yellow and labeled 'People', containing an image of three military personnel. The middle circle is pink and labeled 'Books & References', containing an image of a stack of books. The right circle is green and labeled 'Courses & Courseware', containing an image of a training course interface and a laptop. The circles overlap in the center, with a laptop and a smartphone icon positioned at the intersection of all three.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments
 Open with the image of the 3 labeled interconnected circles, with the laptop and smart phone in the middle.
 At each PAUSE break out a larger graphic and display it on the page.

NEXT go to SL_I_014
 BACK go to SL_I_012

13

Narration: As indicated in the modules, self-learning resources generally fall into three general categories: (PAUSE) people, (PAUSE) books and references, (PAUSE) and courses and courseware. These categories merge, blend, and are frequently interconnected. Your personal computer, iPad, or smartphone may provide you access to many of these resources. To assist with your ongoing and future self-learning, we have provided links, access, and copies of some training resources.

Course: Strategies for Self-Learning
 File Name:
 Section: Intro to Self-Learning
 Page Title: SL_I_014
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Embedded Learning Resources

The screenshot shows a navigation bar with buttons for 'RESOURCES', 'HELP', 'GETTING A LEG UP ON SELF-LEARNING: STRATEGIES FOR SUCCESS', '-BACK', and 'NEXT'. A black stick figure is pointing its right hand towards the 'RESOURCES' button.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_I_015
 BACK go to SL_I_013

14

Narration: No people {like a genie??} or subject specific books or resources have been packaged into the course materials. However, by selecting the resources tab on the navigation bar you can gain access to a variety of documents, presentations, and sites that will support self-learning. As indicated in earlier training, Army Knowledge on-Line provides an unparalleled gateway to a variety of these resources. Hyperlinks to several sites available on A K O are provided. The resources table of contents page furnishes details and a summary of some of these resources. Resources can be downloaded or links saved for your future reference and access. You can explore this tab later, but for now select NEXT to continue.

Course: Strategies for Self-Learning
 File Name:
 Section: Intro to Self-Learning
 Page Title: SL_015
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer

Reflection and Learning



Effective learning requires some time for thinking.

Reflection uses critical thinking to:

- > Examine information or an experience
- > Question what was learned
- > Narrow and select solutions, options, techniques, or courses of action.

Reflection assists you in:

- > Drawing conclusions
- > Adjusting plans proactively
- > Anticipating challenges
- > Employing new techniques
- > Changing opinions or attitudes
- > Determining what techniques work best for particular situations.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Open with the image of Soldier driving vehicle. After 1st sentence, zoom in on the Soldier's reflection in the side mirror.

NEXT go to SL_016
 BACK go to SL_014

Narration: We learn by doing, constructing, building, talking, and writing, but we also learn by thinking. Reflection is thinking about events, activities, things that you have read about, and experiences you have had. The act of reflecting enables you to make sense of what you learned, adopt it, and integrate it into your daily life, routine duties, and job performance. For example, as a learner, you should reflect on the techniques and strategies you have learned and determine what may work best for you. Reflection brings together ideas within a wider perspective. It enables you to see the bigger picture and view a problem or situation in perspective. Reflection will enable you to integrate and apply the knowledge or skills you have learned.

Course: Strategies for Self-Learning

FileName: Intro to Self-Learning
Section: SL_I_016
Page Title: SL_I_016
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Reflection Relevant to Self-Learning Strategies

- Examine experiences you had (or examples you know about) to help make sense of what you are learning and the strategies that help.
- Monitor activities during learning; testing, revising, and evaluating the effectiveness of various strategies.
- Evaluate outcomes against specific criteria of efficiency and effectiveness. (Is it faster; is the solution more accurate; does it meet the standard?)
- Spend extra time focusing on information that is new, unusual, or confusing.
- Seek out different alternatives and points-of-view to help challenge or verify what you are learning.
- Evaluate how well you are able to achieve your learning milestones and goals.



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_I_017
BACK go to SL_I_015

16

16

Narration: As you consider various self-learning strategies, you must consider and determine what works best for you, in your environment, and in your situation. Reflection should be an ongoing process throughout a self-learning effort. These strategies, some of which you have already reviewed in training modules, may be helpful to your process of reflection. Use critical thinking to examine the self-learning strategies that you employ, question their validity or applicability to the situation, and draw conclusions based on their possible benefits and results. For example, recommendations or examples from peers and superiors are a good start point, but reflect and determine what works best for you.

Course: Strategies for Self-Learning
 Instructional Designer: SMS, Art Director, Multimedia Developer

File Name: Intro to Self-Learning
 Page Title: SL_I_017
 Version: 0.3

Review of Self-Learning Strategies

Self-Learning Strategies Inventory

Attitude and Motivation

1. I view the feedback for my performance, challenges, and assignments.
2. I view assignments as tasks.
3. I view learning as a challenge, not a burden or a setback.
4. I understand that there is an opportunity to learn.
5. I view my learning as a part of the process.
6. I take responsibility to reach other sources of information if I feel lost.
7. I take on an active leadership role when asked to help.
8. I believe self-learners are going to be successful.

Management Ability

1. I identify what I can learn to be better when beginning the learning process.
2. I identify when I can learn from others to do a part of what you are learning.
3. I know when you should learning with your leader. (Management ability)
4. I know when you should learn from your peers.
5. I know when you should learn from your instructor.
6. I know when you should learn from your peers.
7. I know when you should learn from your instructor.
8. I know when you should learn from your peers.

Information Seeking

1. I identify your most effective sources of information.
2. I look for examples of management and information.
3. I have been successful in my previous efforts to identify what you need to help me learn.
4. I have been successful in my previous efforts to identify what you need to help me learn.
5. I have been successful in my previous efforts to identify what you need to help me learn.
6. I have been successful in my previous efforts to identify what you need to help me learn.
7. I have been successful in my previous efforts to identify what you need to help me learn.
8. I have been successful in my previous efforts to identify what you need to help me learn.

Self-Regulation

1. I know when to stop learning and take a break.
2. I know when to stop learning and take a break.
3. I know when to stop learning and take a break.
4. I know when to stop learning and take a break.
5. I know when to stop learning and take a break.
6. I know when to stop learning and take a break.
7. I know when to stop learning and take a break.
8. I know when to stop learning and take a break.

Learning Strategy

1. I know when to stop learning and take a break.
2. I know when to stop learning and take a break.
3. I know when to stop learning and take a break.
4. I know when to stop learning and take a break.
5. I know when to stop learning and take a break.
6. I know when to stop learning and take a break.
7. I know when to stop learning and take a break.
8. I know when to stop learning and take a break.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Show image of the Strategies List in NLT 14 font. Allow user to scroll through document.

PRINT and SAVE access PDF Self-Learning Strategies.

NEXT go to SL_I_018
 BACK go to SL_I_016

17

Narration: A list of self-learning strategies is provided once again for your review. You can save or print a copy for your use, consideration and sharing with your Soldiers and others. These strategies from your fellow N C Os provide a foundation. As you refine your self-learning skills you may determine additional strategies that are beneficial for you or your Soldiers.

Course: Strategies for Self-Learning
 Instructional Designer: SMS, Art Director, Multimedia Developer

File Name: Intro to Self-Learning
 Page Title: SL_I_018
 Version: 0.3

Feedback on Self-Learning Strategies

ETHICS
 STANDARDS
 OPERATIONAL
 FEEDBACK
 SELF-DEVELOPMENT
 WARRIOR ETHOS
 PRINCIPLES & IMPERATIVES
 TRIFORCE AND READY 12070
 LEADERSHIP COMPETENCY
 LEADERSHIP QUALITIES

ARMY CULTURE
 VALUES

Please select the Feedback button, complete the survey, and e-mail it to the address indicated.

Feedback

This concludes the Lesson

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

FEEDBACK opens feedback form as active pdf that allows entry and saving to a local file for later e-mail to ARL.

NEXT closes program
 BACK go to SL_I_017

18

Narration: This concludes the lesson, Leg Up on Self-Learning: Strategies for Success. As indicated in the introduction, this lesson and its resources were designed to give you a leg up, a boost into the saddle in support of your ongoing and future self-learning opportunities. Your

training and development as a Soldier and leader are fundamental to the Army's success and mission success in future conflicts. Your feedback on this material and lesson is important. Please click the Feedback button and complete the survey; e-mail it to the address indicated. We wish you success and victory in all future endeavors, "This We'll Defend". "Army Strong".


APPENDIX H: STORY BOARDS - A LEG UP ON SELF-LEARNING:
STRATEGIES FOR SUCCESS: MODULE 2: ATTITUDES & MOTIVATION

Course: Strategies for Self-Learning

Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_001
Version: 0.2

Instructional Designer:
SAC:
Art Director:
Multimedia Developer

Attitudes and Motivations + Your Strengths and Weaknesses



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments	
Still of mentor (1, 2, 0r 3) addressing the student.	No NEXT: Go to SL_AM_002 at the end of the conversation.
Advance to SL_AM_002 when the narration is complete.	BACK go to Intro Module Selection Menu SL_I_??

MENTOR: In my younger days the older sergeants told me that if the Army wanted me to have an attitude, they would have issued me one. However, attitudes are a fact of nature. As N-C-Os and leaders we know it is much easier to motivate Soldiers to do things that they enjoy and understand. It is always more difficult if they don't enjoy the task, or (Pause) they feel pressured. In this example, Sergeant Golden is meeting with his Platoon Sergeant. Listen in; the news is not all good. Sergeant Golden's "to do list" is about to get longer.

Course: Strategies for Self-Learning

Instructional Designer:

File Name: Attitudes & Motivations Toward Self-Learning
Section: SL_AM_002
Page Title: SL_AM_002
Version: 0.2

SMB:
Art Director:
Multimedia Developer:

The Challenge of a Challenge



Navigation: Advance to SL_AM_003 when the narration is complete.
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Still(s) of an SFC addressing a subordinate NCO., trade out as narration continues

No NEXT: Go to SL_AM_003 at the end of the conversation.
BACK: go to SL_AM_001

Narration:

SFC Ivy: SGT Golden, I have some good news and some bad news, which do you want a first?

SGT Golden: Just give it to me straight Sergeant Ivy.

SFC Ivy: Okay. The First Sergeant was just alerted that your squad leader, Staff Sergeant Black, is being reassigned to the Old Guard. He will be clearing within a week. Your squad has been tops in the Company, maybe the Battalion. You are junior, but you have played a major role in that good performance. (Pause) You have demonstrated a lot of potential. The Platoon Leader and I thought that we'd just move you up, but the First Sergeant says that there are two more E (say the letter "e") fives in the Company who deserve a chance, Marsh in 3rd Platoon and Wilson in 2nd Platoon.


SGT Golden: (in a frustrated tone) Come on Sergeant Ivy; isn't Wilson the guy from 2nd Platoon who is always checking out early. Doesn't he have kids who are always getting sick at school or his wife isn't supposed to drive or something?

Course: Strategies for Self-Learning

Instructional Designer:
SMB
Art Director:
Multimedia Developer

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_003
Version: 0.2

Attitude Is Important: Knowing Your Strengths and Weaknesses Is Essential



Navigation: Advances to SL_AM_004 when the narration is complete.

Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments Still of an SFC addressing a subordinate NCO., trade out as narration continues	No NEXT: Go to SL_AM_004 at the end of the conversation. BACK go to SL_AM_002
--	--

Narration:

SFC Ivy: At ease SGT Golden! Being critical of others won't help your case. The First Sergeant has made up his mind and convinced the Company Commander. He plans to pick the N-C-O who demonstrates that he is ready to go to the Advanced Leaders Course. If there is a tie, he wants to conduct a company board and rate the competitors. Your best course of action is to quit complaining and get the prerequisites for A-L-C knocked out ASAP. Don't you want be the First Squad Leader? Get your head right, Sergeant.

SGT Golden: Okay Sergeant Ivy. Sorry that I popped off. Seems like the days aren't long enough sometimes.

SFC Ivy: Yeah, tell me about it. Listen, suck it up young Sergeant, make it happen.

Course: Strategies for Self-Learning

File Name: Section: Attitudes & Motivations Toward Self-Learning Page Title: SL_AM_002 Version: 0.2

Instructional Designer: SMC Art Director: Multimedia Developer

! SAMPLE ONLY !

Where Do You Begin?



Navigation: Enable NEXT when film icon ends.
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Still with SGT Golden in the background thinking and the mentor in the foreground addressing the student.


NEXT go to SL_AM_005
BACK go to SL_AM_002

MENTOR: Think about how you would react and your motivation in a similar situation. Sergeant Golden certainly let his attitude show. Sergeant Ivy cut him some slack, but the bottom line is that if he wants to be a squad leader, he has some prerequisites to complete. He also has some skills and knowledge to polish if it comes to a board. Attitude and motivation are key aspects of self-learning. So are understanding your learning strengths and weaknesses. Think about your own development. Do you know what your strengths and weaknesses are? Do you know how to assess them? When you are confronted with a new learning challenge, how do you react? What attitudes do you express? Put yourself in this situation.

Course: Strategies for Self-Learning
Sector: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_005
Version: 0.2

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Examining Attitudes, Strengths, and Weaknesses



Examining and determining your strengths and weaknesses as a learner, as well as determining your attitudes, requires some assessment effort. Sources for this assessment include collecting and gauging information from 3 principal sources:

- A self assessment
- Formal assessments
- Feedback from others

After examining these sources you will be better able to accurately identify your strengths, weaknesses, and attitudes toward learning.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments Display mentor 1, 2, Or 3 with on screen text.	NEXT go to SL_AM_006 BACK go to SL_AM_004
---	--

MENTOR: As you think about your future self development, it is important that you understand your learning strengths and weaknesses. Additionally, as you prepare to embark on a new self-learning effort, both those you want to do and those that you must do, you should assess the situation and understand your attitudes. You cannot adjust a poor attitude, mitigate a weakness, build on a strength, or improve your motivation without being aware of it. Determining where you are and what you may need to alter or develop is critical. This module will provide you information on how to conduct a self-assessment. The three principal sources of information for this assessment are listed. Take notes and record data from your assessment and findings as you collect information.

Course: Strategies for Self-Learning
File Name: Attitudes & Motivations Toward Self-Learning
Sector: SL_AM_005
Page Title: SL_AM_005
Version: 0.2

Instructional Designer: SMC
Art Director: Multimedia Developer

Techniques and Strategies for Determining Your Attitudes, Strengths, and Weaknesses

Examine each source of assessment then select NEXT to explore aspects of motivation.

Numbers in Blue are provided for reference ONLY do NOT display!

1

2

3

4

- Formulating a self assessment
- Reviewing formal assessments
- Gathering feedback from others
- Identifying strengths and weaknesses

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

BLUE numbers are for reference only! Do not display. NEXT go to SL_AM_025
BACK go to SL_AM_005

If 1 is selected go to SL_AM_007; if 2 is selected go to SL_AM_013;
If 3 is selected go to SL_AM_016; if 4 is selected go to SL_AM_024.

Provide a visited state; place a "v" on the blocks selected. Do not enable
NEXT till all buttons are selected.

Narration: Chances are that you may not be aware of all of your strengths or your weaknesses. A significant step in identifying your strengths and weaknesses is to conduct a self-examination. However, this assessment is more thorough and complete if you gather information about yourself from other sources. These sources may include a review of records and interacting with others who know you or have observed you. You will then need to review the findings and make sense of what you determine. Select each button to learn more about assessment and evaluation techniques that can assist you. After you have examined each topic select Next to continue.

Course: Strategies for Self-Learning
 Instructional Designer: SMG, Art Director: Multimedia Developer

File Name: Attitudes & Motivations Toward Self-Learning
 Section: SL_AM_007
 Page Title: SL_AM_007
 Version: 0.2

NCO Self-Learning Strategies Scale: Attitudes and Motivations

The table below provides a list of various learning strategies that NCOs have reported using to learn on their own. For each learning strategy listed, please rate your degree of agreement in your present approach to self-learning. Select the submit button when your selections are complete.

	Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree
I stay on the lookout for new experiences, challenges, and/or assignments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I seek out new problems to solve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep working at learning something, even when it is difficult.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand failure is an opportunity to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never stop learning in order to stay knowledgeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take responsibility to learn what I need to in order to be effective in my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am always on the lookout for better ways to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I monitor what I am doing when I am learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Navigation: Graphics: Animation: Audio: Video: Functionality: interactivity: Hyperlinks:

On Screen Treatments
 Selection of submit will cause computation of the average score for these factors and display that value on SL_AM_005. NEXT go to SL_AM_008
 Values are: SD=1, SwD=2, NAorD=3, VswA=4, SA=5. BACK go to SL_AM_006
 Require selection of a value for each (row) Learning Strategy; compute value and advance when SUBMIT is selected.

Narration: A critical aspect of your self-assessment is to gauge your attitudes about self-learning. Using your own experiences and attitudes, follow the instructions on the slide and rate your agreement with each of the Learning Strategies listed. There are no right or wrong selections. Your honest response will provide you with the most accurate input to your self-assessment. After you have determined your agreement with each statement, click on the submit button to compare your self-assessment to your peers and others.

Course: Strategies for Self-Learning
 Instructional Designer: SMG, Art Director: Multimedia Developer

File Name: Attitudes & Motivations Toward Self-Learning
 Section: SL_AM_008
 Page Title: SL_AM_008
 Version: 0.2

Your Score for Attitudes and Motivations

DATE: _____

Rank			
	SGT	SSG to SFC	MSG/1SG >
1	1	1	2
2	5	2	3
3	30	29	26
4	27	30	25
5	37	38	44

Career Management Field			
	Combat Arms	Combat Support	Combat Service Support
1	1	1	1
2	3	4	4
3	32	29	26
4	32	27	28
5	32	39	42

Your Score

Civilian Education			
	GED/H.S.	Some College	College Degree
1	1	1	1
2	5	3	4
3	38	27	26
4	24	30	29
5	33	39	40

Time in Service (years)			
	0 to 5	5 to 10	10 +
1	2	1	1
2	5	4	3
3	26	31	28
4	26	28	30
5	42	37	38

On Screen Treatments
 Display the computed number from SL_AM_007 and data. NEXT go to SL_AM_009
 SAVE: permits the student to save this page (MS Office product or PDF) BACK go to SL_AM_007
 to the desktop or a designated file on the computer being used.
 PRINT: permits the student to print this page if the computer is connected to a printer.

Navigation: Graphics: Animation: Audio: Video: Functionality: interactivity: Hyperlinks:

Narration: Now compare your score for attitudes and motivational strategies to others. If your score is equal to or below those of your peers or more senior N-C-Os, you have some work to do. You may see the impact reflected in a less than enthusiastic attitude toward self development and learning. Perhaps you procrastinate or postpone beginning or completing learning tasks. You also may experience frustration with or make frequent changes to your learning plans. You may sometimes resist trying or adopting changes to tactics, techniques, or procedures in your job or duties, or you may be reluctant to integrate or employ new equipment or systems. Scoring higher than your peers may indicate that your learning attitudes and self-motivation strategies are strengths that you can build on. You may print or save this data for your future reference. After reviewing the comparisons, select next to examine additional aspects of higher self-assessment scores.

Course: Strategies for Self Learning


File Name: Attitudes & Motivations Toward Self Learning
Sector: SL_AM_009
Page Title: SL_AM_009
Version: 0.2

Instructional Designer: SMC
Art Director: Multimedia Developer

More on the "So What" of Your Your Score for Attitudes and Motivations

Research indicates that people who score high are more open to and positive about learning. They:

- Seek and react to feedback from others.
- Learn more quickly from their experiences.
- Tend to reflect on their experiences, are inquisitive and ask themselves:
 - Why things happen?
 - Why they respond as they do?
- Seek clarification more readily and ask questions to improve their understanding.
- Understand more clearly their learning strengths and weaknesses.



Leaders set the example.
The positive and negative motivation and attitudes are contagious and spread quickly in an organization.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_DD9
BACK go to SL_AM_007

Narration: Your assessment score and response to the assessment questions provide you an indication of your current attitude toward self-learning and self development. Research indicates that individuals who have higher scores are more positive and open. They tend to be curious, broad-minded, and seek out new experiences. Openness to learning is a predictor of motivation to engage in and be more interested in self development. Moreover, openness to new experiences is an important predictor of the likelihood of employing other self-regulated learning strategies. Additionally, when leaders express a positive attitude toward self development and self-learning, they influence their subordinates to adopt similar positive attitudes.

Course: Strategies for Self-Learning
 Instructional Designer: SMC
 Art Director: Multimedia Developer

File Name:
 Section: Attitudes & Motivations Toward Self-Learning
 Page Title: SL_AM_010
 Version: 0.2

Self Assessment: What are your talents?


Before you can set your self development direction you need to make yourself aware of likes, dislikes, and preferences.

- **What are you good at?** Determine areas where you excel. For example you may be good at:
 - Fixing engines
 - Teaching others
 - Performing physically demanding activities

Your strengths may be indicated when performing activities and time flies by or you learn quickly.

- **What are you not so good at?** Weaknesses may be evident when you feel:
 - Uncomfortable
 - Bored
 - Ineffective
 - Frustrated

There may be types of activities that you avoid such as working with numbers or speaking in public.



Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments


NEXT go to SL_AM_011
 BACK go to SL_AM_009

Narration: In your self assessment you should take a structured approach. Ask yourself questions and assess your attitudes toward types of activities. Your strengths and weaknesses may be evident in the attitudes that you express. This is part of being self-aware. You should ask yourself the questions listed, and you should record your responses to combine or compare them with the other elements of your assessment.

Course: Strategies for Self-Learning
 Instructional Designer: SMC
 Art Director: Multimedia Developer

File Name:
 Section: Attitudes & Motivations Toward Self-Learning
 Page Title: SL_AM_011
 Version: 0.2

Self Assessment: Cautions



As you think about your strengths, weakness, and attitudes toward learning, consider these questions.

- What do you do well or what are you good at?
- What do you know a lot about?
- What makes you successful and productive?
- What do you like to do?
- What kinds of things have you done in your life?

Your work?

The answers to the questions begin to provide insight to your learning foundation.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_012
 BACK go to SL_AM_010


Narration: Self assessments, (Pause) by themselves, (Pause) can be inaccurate or deceiving. If you are completely honest, they provide good information. However, with a self

assessment alone, you may not see yourself as you truly are. It is always best to be skeptical about information from a single source. Your self assessment provides a good start, but other sources of information about your strengths, weaknesses, and attitudes must be considered.

Course: Strategies for Self-Learning

File Name: Attitudes & Motivations Toward Self-Learning
Section: SL_AM_012
Page Title: SL_AM_012
Version: 0.2

Instructional Designer: SMG
Art Director: AM
Multimedia Developer: MDD



Self Assessment: Your Reality Check

Using the answers, begin assessing your findings to determine possible attributes and talents. These attributes are possible strengths. You will likely use them throughout your self-learning.

In your self assessment, did you:

- Identify any consistent ideas that stood out across your answers?
- Find any inconsistencies or shortcomings?

Think about your initial findings in relation to the next set of questions:

- What would you like to be able to do better in your job?
- What do you want to know more about?
- What would make you more successful and productive?

Think about these questions now, but we recommend that you consider them again after you have information from other sources.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_D06
BACK go to SL_AM_011

Narration: Keep in mind that your self assessment is from a single source (pause) - you. (Pause) Again, it is recommended that you remain skeptical about information from a single source. However, an honest self assessment provides a good start. You can begin now to think about knowledge or skills you desire to acquire and attitudes that could make you more successful or productive. Avoid premature conclusions but keep your initial findings in mind as you consider other sources.

Course: Strategies for Self-Learning

File Name:
Sector: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_D15
Version: 0.2

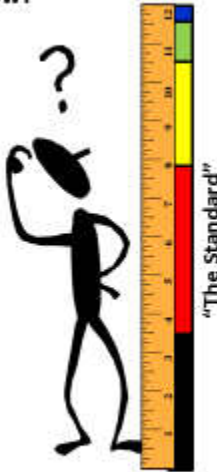
Instructional Designer: SMI
Art Director: Multimedia Developer

Formal Assessment: What do your records show?

Sources for your formal assessment may include:

- **Performance evaluations:** NCDERs (DA Form 2166-8), records of formal performance and developmental counseling (DA Form 4856), Service School Academic Evaluation Reports (DA Form 1059), and civilian job evaluations.
- **Skills tests:** Expert Field Medical Badge (EFMB), Expert Infantryman Badge (EIB), Army Physical Fitness Test (APFT), and other skill tests.
- **Tests administered in resident and non-resident schools**
- **Field performance evaluations**, such as those at the combat training centers and unit evaluations
- **Results of Inspections**, such as command inspection programs, IG inspections, etc.
- **Intelligence and aptitude tests** - Armed Services Vocational Aptitude Battery (ASVAB) - the General Technical [GT] Score as well as other Line Scores should be included and the Defense Language Aptitude Battery (DLAB)
- **Occupational interest inventories** - e.g., Strong Interest Inventory *
- **Personality assessments** - e.g., California Psychological Inventory * or the 16PF*

* **NOTE:** Links to these inventories and assessments can be found at the Resources Tab.



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_D14
BACK go to SL_AM_006

Narration: Formal assessments provide less bias sources to gain insight into your strengths and weaknesses. Again, multiple sources should be consulted. Records and reports provide a measure of your performance and compare it to a standard. Sometimes these assessments provide comparisons to the performance of others or rank you with your peers. Other types of formal assessment provide customized skill or aptitude appraisals. These may provide insights to undiscovered or undeveloped talents or a realistic view of perceived attribute and characteristics. Review this list then examine examples of records provided from other N-C-Os.

[This looks good, but we'll need to be sure that we can include Strong and CPI, given copyright. We can include links with information about these tests, like Wikis.]

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name: Amitudes & Motivations Toward Self-Learning
Section: SL_AM_014
Page Title: SL_AM_014
Version: 0.2

Poor NCOER Example Not All Records Provide Value

NCOER/AFMPT/AFPT Scorecard		UNIT	PERIOD
NCOER/AFMPT/AFPT Scorecard		111-22-1111	2011-03-01
<p>4. LEADERSHIP</p> <p>o Any performance characteristics by supervisors</p> <p>o performance expectations</p>			
<p>4. PERSONAL FITNESS AND BALANCE</p> <p>o encourages Soldiers on equal Company team</p> <p>o participated on the Company softball team</p>		AMPT 20110301B	10/139 YES
<p>4. LEADERSHIP</p> <p>o guided his Soldiers to improve their performance on range, at PT, and working as a team</p> <p>o provides role model for his Soldiers</p>			
<p>4. TRAINING</p> <p>o prepared his Soldiers for the EIB test</p> <p>o want to let Soldiers get the best training possible</p> <p>o improved weapons qualification and PT scores of his Soldiers</p>			

This NCOER extract provides few specific examples of conduct or performance. The rated NCO, some future Promotion Board, or an Assignments NCO will have difficulty understanding the contributions made by SGT Notmakit or his strengths or weaknesses. This NCOER provides few specific examples to support the ratings given.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_015
BACK go to SL_AM_013

Narration: Not all records will provide valuable information for your effort. You may have to search for specific references to or examples of strengths or areas that require improvement. Your rater and senior rater may not always provide the specifics needed in their rating bullets. In this illustration, an extract from an N-C-O-E-R, this sergeant's rater provided very few examples to substantiate the ratings in the N-C-O-E-R; many of the bullets are weakly worded, more space filler than substance. From the extract of this single record, it would be difficult to find indications of this N-C-O's strengths, weaknesses, or attitudes.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name: Amitudes & Motivations Toward Self-Learning
Section: SL_AM_015
Page Title: SL_AM_015
Version: 0.2

Some Records Require Interpretation and Context

APFT Excellence

Army Physical Fitness Test Scorecard		GOODEN, Jene R.	
SERGEANT		MALE	
1 / A / 1-SP INF BN			
TEST DATE	TEST SCORE	TEST DATE	TEST SCORE
Jul 14, 11	SGT 20	Jul 14, 11	SGT 20
70	157	70	159
67	94	64	90
70	87	72	90
13-28	93	13-26	92
TOTAL: 274		TOTAL: 272	
Don Books SFC		John Stup SFC	

This APFT card provides an example of a strength, in this case, the NCO's physical strength. Sergeant Gooden has sustained a high level of physical readiness over the past 6 months. He actually improved his sit-up score and qualified for the Army Physical Fitness Badge. With minimal additional conditioning, he seems ready to participate in training or attend schools that are physically demanding.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_006
BACK go to SL_AM_014

Narration: When scores or ratings appear on some records, they may require some interpretation. In this example, the young sergeant did not improve his A-P-F-T score from October to March. However, he did sustain a high score, improved his sit-up raw score, and his scores of 90 or above in each event and total score now qualify him for the Army Physical Fitness Badge. This record provides an indication of a strength, in this case his physical strength, and provides evidence of this N-C-O's preparedness to participate in training programs or attend schools with high physical fitness demands. However, to provide the most accurate evaluation, your formal assessment should draw on current records from multiple sources.

Course: Strategies for Self-Learning

File Name:

Section: Attitudes & Motivations Toward Self-Learning

Page Title: SL_AM_016

Version: 0.2

Instructional Designer:

SME:

Art Director:

Multimedia Developer:

Gathering Feedback from Others



A senior NCO coaches and guides his subordinates as they prepare to ready their unit for deployment.

Feedback from others can come in varied forms. You may be able to observe some people and determine through body language or comments their opinions of you. From their comments and actions you can surmise what they are thinking. The direct approach, just asking for feedback, may be the best approach for others.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_017
BACK go to SL_AM_006

Narration: Hearing what your subordinates, peers, superiors, family, and friends think about you will also contribute to your overall assessment. Their feedback can assist in identifying strengths and weaknesses that you may not have noticed or that you have been reluctant to acknowledge. Among these possible contributors, your supervisor plays a unique role. Supervisors should provide guidance and recommendations for self development of subordinates. There are two ways to gather feedback from others. You can either watch how they act and figure out what they think of you or (Pause) you can ask them directly.

Course: Strategies for Self-Learning

Instructional Designer:
SMG:
Art Director:
Multimedia Developer:

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_017
Version: 0.2

Gathering Feedback from Others: the Observation Approach



To gather more accurate perceptions, watch the reactions of the same person several times. Trends should emerge helping you to gauge their opinion toward you. Watching someone once is not very reliable. Their behavior may be the result of other issues.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_018
BACK go to SL_AM_016

Narration: Watching how others act toward you, listening to their comments, and monitoring the decisions they make regarding you, provide indications of what they think about your skills and expertise. It is important to observe eye contact, facial expressions, and body language. Listen to what they say and the tone of their voice. The time that they spend with you and frequency of contact are also aspects to observe. When observing others, watch the same person several times to help you see trends indicating the opinions that they hold toward you.

Course: Strategies for Self-Learning

Instructional Designer:
SMG:
Art Director:
Multimedia Developer:

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_018
Version: 0.2

Observing How Others React to You: Supervisors and Superiors

Observation guides; things you should watch for:



Supervisors and Superiors

- Who gets the most challenging assignments in your work group?
- Who does your supervisor go to in an emergency or to get tough problems solved?
- Who does your supervisor praise the most in your work group?
- What kinds of tasks does your supervisor give you versus others?
- How does your supervisor react to your suggestions compared to the suggestions of others?
- Does your supervisor listen to your opinions on certain subjects much more or much less than the opinions of others in your work group? If so, what are those subjects?

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_019
BACK go to SL_AM_017

Narration: Use these questions to guide your observations of supervisors and superiors. Look for trends and indicators. Keep your observations in context. Their behaviors may sometimes be the result of other issues or circumstances. For example, if your supervisor selected someone else to perform an important task was it because you were too busy, unavailable, or was it the other persons turn?

Course: Strategies for Self-Learning

File Name: Attitudes & Motivations Toward Self-Learning

Section: SL_AM_018

Page Title: SL_AM_018

Version: 0.2

Instructional Designer: SMC


Art Director: Multimedia Developer

Observing How Others React to You: Peers and Subordinates

Observation guides; things you should watch for:

Peers and Subordinates

- Do peers and subordinates come to you for help or advice? On what topics?
- Do they understand you or seem confused or overwhelmed by what you say?
- Do they repeatedly contact you for help, or do your contacts tend to be one-time interactions?
- Does their enthusiasm and interest remain high, increase when they interact with you, or does it diminish?
- What does their body language communicate? Is it relaxed, apprehensive, reserved, etc.?



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_020
BACK go to SL_AM_018

Narration: Use these questions to guide your observations of peers and subordinates. Again, look for trends, indicators, and keep your observations in context. Behaviors may sometimes be the result of other issues. By using your observations of others, you can gain insights into their perceptions of you. However, your conclusions are at best an educated guess—so stay open to new information and in sights.

Course: Strategies for Self-Learning

Instructional Designer:
SMG
Art Director:
Multimedia Developer

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_020
Version: 0.2

Asking for Feedback



Who to Ask

- Ask people who have been able to observe you enough to offer useful information.
- Ask people who have observed you from different perspectives.
- Ask a former or current supervisor, mentor, or teacher who may have greater experience in an area of interest.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_021
BACK go to SL_AM_019

Narration: While many good insights into your strengths and weaknesses can be gained through observing how others interact with you, often directly asking other people results in better information. When asking for feedback, talk to people who know you in different ways. Consider talking with people in different categories: subordinates, peers, and supervisors. Your supervisor, subject matter experts, teachers and trainers, or mentors who have observed your performance may provide the best feedback.

Course: Strategies for Self-Learning

Instructional Designer:
SMG
Art Director:
Multimedia Developer

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_021
Version: 0.2

Types of Questions to Ask



- Get descriptions of your behaviors and what they thought about your behaviors and actions.
- For feedback about a recurring problem, ask about the situation in which the problem occurs, your actions in the situation, and the usual outcomes that result.
- Ask for suggestions for other ways of handling problem situations.
- Ask specifically about your strengths and weaknesses as a learner, as well as their perceptions of attitudes that may get in the way of your success.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_022
BACK go to SL_AM_020


Narration: Ask questions that will contribute to your self-assessment and later analysis. Recommended types of questions are listed. Take notes. Remember that you are seeking honest opinions and impressions. Do not be defensive. You came for feedback not debate, so keep any feelings and disappointments at bay. This feedback will help you determine some things to build on as well as things to correct and improve.

Course: Strategies for Self-Learning

Instructional Designer:
SAC
Art Director:
Multimedia Developer

File Name:
Section: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_021
Version: 0.2

Things to Remember When Asking Questions



- Be respectful of other people's time, and prepare questions ahead of time.
- Listen carefully and respectfully.
- Ask for clarification and examples when points are unclear.
- Summarize the points to make sure that you understand the person correctly.
- Thank the feedback providers for their time and assistance.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_AM_006
BACK go to SL_AM_021

Narration: Be sure that you maintain a professional air. You may want to come back to this person at some point in the future to reassess yourself or gauge your progress. Remember that they are providing their attention to your development and future. Be sure to thank them for their time and assistance. Consider their time as an investment in you and your development.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Sector: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_023
Version: 0.2



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

Identifying Your Strengths and Weaknesses

List the findings of your self-assessment, formal assessment, and feedback from others.

Strengths are usually indicated by repeated success or expertise in a particular type of activity. These abilities may come easily to you even though others find them difficult. Consider these questions:

- What did you note as being your favorite things to do, learn about?
- What do other people turn to you for help with?
- What do your recent assessments show are your strengths?

Weaknesses are tasks that you struggle to learn; have difficulty performing; or find boring, draining, or tedious. Consider these questions:

- What did you note as being hard or not fun to do?
- What did other people suggest as a limitation of yours?
- Did formal assessments point out any deficiencies?

On Screen Treatments

Display mentor 1, 2, or 3 and the onscreen text.

NEXT go to SL_AM_024
BACK go to SL_AM_006

MENTOR: Okay, now let us discuss the remaining step. You should have taken notes throughout the process. From the input, you should be able to identify common perceptions people have of you. Behaviors, comments on your performance, and opinions expressed by others should be reflected in formal assessments, observing others, and receiving direct feedback. Instead of taking a single comment or point of feedback about you from others as fact, look for the recurring themes or patterns that you read about, observed, or heard from more than one person or source. Consider the questions listed to support your analysis.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Sector: Attitudes & Motivations Toward Self-Learning
Page Title: SL_AM_024
Version: 0.2



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

Identifying Attitudes and Plan self development

What did others say about your attitude? What personality traits did they indicate had a negative impact on you as a learner or as a leader?

<p style="text-align: center;">My Strengths</p> <ul style="list-style-type: none"> • _____ • _____ • _____ • _____ • _____ • _____ • _____ • _____ • _____ • _____ 	<p style="text-align: center;">My Weaknesses</p> <ul style="list-style-type: none"> • _____ • _____ • _____ • _____ <p style="text-align: center;">My Attitudes</p> <ul style="list-style-type: none"> • _____ • _____ • _____ • _____ 	<p style="text-align: center;">My Self Development and Self-Learning Plan</p> <ul style="list-style-type: none"> • _____ • _____ • _____ • _____ • _____
---	--	--

These factors will change with time and experience. Consider periodic reassessment when you change duties, graduate from a course, get promoted, or experience significant changes in your career or life.

On Screen Treatments

Display mentor 1, 2, or 3 and the onscreen text.

NEXT go to SL_AM_006
BACK go to SL_AM_023

MENTOR: Look at what others identified as your strengths and weaknesses and compare their comments to what you know about yourself and what you learned when looking at the results of your formal assessments. Examining the way you live your life and the situations you have experienced can reveal things you may desire to change, improve, or reinforce and sustain. Now catalog what you have learned. The results will facilitate your plan of action for improvement through self development and self-learning. However, keep in mind that you will change with new experiences. Periodic reassessments are recommended.

Course: Strategies for Self-Learning
 Instructional Designer: SMI
 Art Director: Multimedia Developer

File Name: Attitudes & Motivations Toward Self-Learning
 Section: SL_AM_006
 Page Title: SL_AM_006
 Version: 0.2

Self-Learning Attitudes and Motivations Summary

To properly prepare for self development and self-learning you must assess where you are. An important aspect of that determination is identifying your strengths and weaknesses. This assessment should include:

1. Self-assessment. Determine your attitudes toward learning and your strengths and weaknesses from your perspective. Understand that it is difficult to honestly self-assess and your opinion may be prejudiced.
2. Conduct a formal assessment. Review records of performance assessments, skill assessments, aptitude and intelligence tests, and other assessments and inventories that compare you to a standard.
3. Gather feedback from multiple observations of others. Detect trends from how they interact with you and act toward you.
4. Ask for feedback from subordinates, peers, and supervisors. Detect trends.
5. Determine your strengths, weaknesses, and attitudes from multiple sources to provide input to your self development and self-learning plans.

Self Assessment Job Aid

Select NEXT to continue or BACK to return to the instructional menu for this module.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to S_SL_I_0??
 BACK go to SL_AM_006

NEXT goes to the Intro Module Selection Menu SL_I_??

Narration: Here is a summary of the module. It provides the steps of the assessment process to determine your attitudes, strengths, and weaknesses toward self-learning and self development. Select the button to open, save or print a Self Assessment Job Aid. Review this list and select NEXT to continue or BACK to return to the instructional menu for this module.

APPENDIX I: STORY BOARDS - A LEG UP ON SELF-
LEARNING: STRATEGIES FOR SUCCESS: MODULE 3: PLANNING AND ANALYSIS
STRATEGIES

Course: Strategies for Self-Learning

Instructional Designer:
SAC
Art Director:
Multimedia Developer

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_001
Version: 0.2

Learning Something New or Obtaining a New Skill



Navigation: Advance to SL_PA_002 when the
Graphics: narration is complete.
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments
Still of mentor (1, 2, Or 3) addressing the student.

NEXT go to SL_PA_002
BACK go to Intro Module
Selection Menu SL_1_??

Narration:

MENTOR: Accepting challenges and learning new skills are elements of your job description. The difference between a stepping stone and a stumbling block is where you put your foot. You need to step off, get started the right way. In this example, your buddy Sergeant Smith is receiving a new mission from his Platoon Sergeant. Let's listen in.

Course: Strategist for Self-Learning

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_002
Version: 0.2

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

It Starts with a New Requirement



SGT Smith

SFC Jones

Navigation: advance to SL_PA_003 when the
Graphics: narration is complete.
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Still of an SFC addressing a subordinate NCO.

No NEXT: Go to SL_PA_002
at the end of the
conversation.
BACK go to SL_PA_001

Narration: (Use voices of Smith and Jones)

SFC Jones: Hey SGT Smith, got a mission for you. We begin gunnery with basic rifle marksmanship and qualification firing in three weeks. I want you to develop classes on bore light procedures, sight adjustments, and zeroing. I want each Soldier in the Platoon to be able to zero his own weapon effectively and not burn a lot of unnecessary ammo. Preliminary Marksmanship Instruction begins in two weeks. Any questions?

SGT Smith: Ah-h-h, No Sergeant.

Advance to SL_PA_003

Course: Strategist for Self-Learning

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_003
 Page Title: SL_PA_003
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

What New Skills Are Required?



SGT Smith

SFC Jones

Navigation: Advance to SL_PA_004 when the narration is complete.
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Still of an SFC addressing a subordinate NCO.

No NEXT or BACK.
 Go to SL_PA_004 at the end of the conversation.

Narration: (Use voices of Smith and Jones)

SFC Jones: How about it Smith, you ever taught these marksmanship skills before? How about using a bore light?

SGT Smith: Ah-h-h, No Sergeant.

SFC Jones: Well you better get spun up. This is your pony to ride trooper, but . . . let me know if you need help.

Advance to SL_PA_004.

Course: Strategist for Self-Learning

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_004
 Page Title: SL_PA_004
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Where Do You Begin?



Navigation: Enable NEXT when narration ends.
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Still with SGT Smith in the background thinking and the mentor (1, 2, or 3) in the foreground addressing the student.

NEXT go to SL_PA_005
 BACK go to SL_PA_002

Narration:

MENTOR: Well Sergeant Smith sure doesn't seem very confident about all this. For sure, he has some learning to do; maybe a new skill or two to master. What about you? When you get a new tasking or mission, especially one that you don't know very much about, what do you do? How do you approach preparing to gain new knowledge or learn new skills? Put yourself in this scenario. Think about it a minute then select NEXT to begin a self-assessment.

Course: Strategies for Self-Learning
 Instructional Designer: SMG: Jim Director, Multimedia Developer

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_005
 Page Title: SL_PA_005
 Version: 0.2

NCO Self-Learning Strategies Scenario Scale: Planning and Analysis

The table below provides a list of various learning strategies that NCOs have reported using to learn on their own. For each learning strategy listed, please rate how relevant it would be in your approach to learning in this or a similar scenario. Select the submit button when your selections are complete.

	Not Relevant	Somewhat Relevant	Relevant	Very Relevant	Essential
Clearly define what I needed to learn when beginning the learning process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify what I hope to be able to do as a result of what I am learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Break down my overall learning task into smaller, manageable parts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan step-by-step what I need to do in working toward my goal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plan how to pace my learning to minimize conflict with my other obligations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prioritize learning tasks and/or topics that need to be covered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop a time-line, roadmap, or list of milestones and use them to track my progress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Set a deadline to complete my learning task and/or produce a product (e.g., a briefing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SUBMIT

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments
 Selection of submit will cause computation of the average score for these factors and display that value on S_SL_PA_005.
 Values are: NR=1, SR=2, R=3, VR=4, E=5.
 Require selection of a value for each (row) Learning Strategy, compute value and advance when SUBMIT is selected.

SUBMIT go to SL_PA_006
 BACK go to SL_PA_004

Narration: Consider the scenario you observed and rate the relevance of each of the Learning Strategies listed. There is no right or wrong selection. An honest response will provide you with the most accurate self-assessment. After you have determined the relevance of each strategy, click on the submit button to compare your self-assessment to peers and others.

Course: Strategies for Self-Learning
 Section: Planning and Analysis for Self-Learning
 Page Title: SL_PA_005
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Self-Learning Results and Data Comparison

Rank

Your Score: 4.5

Career Management Field

Civilian Education

Time in Service

DATE: _____

Click Print to: _____
 Click Save to: _____
 When you are finished viewing the data, click _____ to continue.

Menu
Print
Save
Back
Page x of y
Next

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality: Displays computed value in Your Score
Interactivity:
Hyperlinks:

On Screen Treatments

Display the computed number from S_SL_PA_004 and date. NEXT go to SL_PA_007
 Display as bar graph with NCO overlaid. BACK go to SL_PA_005
 SAVE: permits the student to save this page (MS Office product or PDF) to the desktop or a designated file on the computer being used.
 PRINT: permits the student to print this page if the computer is connected to a printer.

Narration: Now compare your score for the relevance of Planning and Analysis in self-learning strategies to others. Your average score is represented by the Soldier icon. If your score is equal to or below those of your peers or more senior NCOs, you have some work to do in developing or refining your attitudes, strategies, and approach to self-learning. In the past, you may see the impact reflected in disrupting conflicts, wasted time, or lack of organization as you embarked on new self-learning efforts. Scoring higher than your peers may indicate that your planning and analysis skills and strategies are a strength for you, one that you should build on. After reviewing the comparisons, select next to review ways to improve your self-learning strategies that relate to planning and analysis.

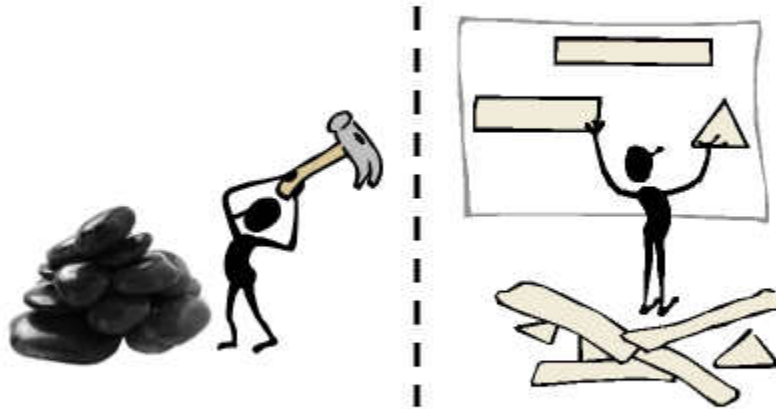
Course: Strategies for Self-Learning

Instructional Designer:

File Name:
Sector: Planning and Analysis for Self-Learning
Page Title: SL_PA_007
Version: 0.2

SMB:
Art Director:
Multimedia Developer:

Varied Approaches to Self-Learning Planning



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_008
BACK go to SL_PA_006

Narration: Some NCOs described their approach to self-learning as “diving in” or “just doing it”. They spend little or no effort on upfront planning, analysis, or prioritization. Other NCOs described creating schedules, trackers, spreadsheets, and other aids to work through their self-learning process and using software like excel or word documents to maintain a checklist and summary of what they had learned and what they intended to do next in the process. While extensive preparations may not be required for all self-learning, the “dive in” or “get a bigger hammer” approach seldom proves successful for complex, large, or self-learning tasks over extended periods.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_008
Version: 0.2

Planning to Learn



1. What do I need to learn; what is my goal?
2. What should I be able to do, perform, or know after I learn?
3. What are the associated milestones, tasks, or sub-elements to my goal?
4. How do I attain these milestones?
5. How do I learn but keep from conflicting with other obligations?
 - Normal duties
 - Family plans
 - Other
6. How do I prioritize the tasks or topics that need to be covered?
7. How do I track my progress toward the milestones and goal?
8. What is the deadline; when is the product due or performance required?

Navigation:
Graphics:
Animation: Trigger actions on the narration.
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments
Display the image of SGT Smith with the Question Mark. At the end of the next to last sentence, 1. fade the Question Mark, 2. display the list of questions to the right of the page, and 3. display the light bulb over SGT Smith's head.
NEXT go to SL_PA_009
BACK go to SL_PA_007

Narration: Think back to the scenario and Sergeant Smith's dilemma. He has some things to learn and a lot to get done in a short time. He may be trying to figure out how to do the whole thing, and may not be considering how to divide the task into smaller or easier to accomplish elements. He may not have yet determined what he needs to learn or the most efficient and effective way to accomplish the self-learning tasks. We will approach self-learning planning and analysis from that perspective. (display and turn on the idea light bulb) Review the questions related to "planning to learn," then select next to continue.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

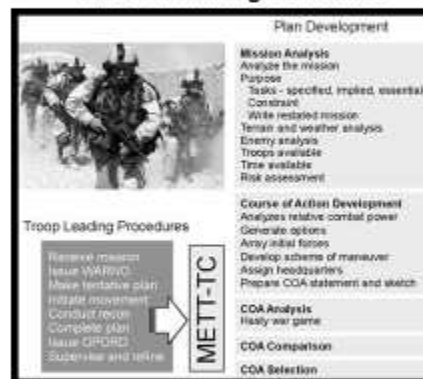
File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_009
Version: 0.2

Planning Is Planning

Checklist for Planning a Self-Learning Project

1. Find a focus
2. Set realistic goals
3. Develop ideas for specific strategies and activities for learning
4. Identify resources and support systems
5. Develop an action plan
6. Execute the plan
7. Review and evaluate

Tactical Planning Guidelines



Navigation:
Graphics:
Animation: Trigger actions on the narration.
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments
NEXT go to SL_PA_D10
BACK go to SL_PA_008

Narration: Think back to a real world or training tactical mission that you successfully completed. What made it successful? What would you do the same or do differently given a similar mission? Preparing to execute a self-learning project and preparing to carry out a tactical mission have many similarities. Self-learning can be approached using similar guidelines for planning.


Course: Strategies for Self-Learning

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_010
 Page Time: 02
 Version: 0.2

Instructional Designer: SMC
 Art Director: Multimedia Developer

Similar Guidelines

Plan Development



Mission Analysis
 Analyze the mission
 Purpose:
 Tasks - specified, implied, essential
 Constraints
 Write related mission
 Terrain and weather analysis
 Enemy analysis
 Troops available
 Time available
 Risk assessment

Course of Action Development
 Analyzes relative combat power
 Generate options
 Array initial forces
 Develop scheme of maneuver
 Assign headquarters
 Prepare COA statement and sketch

COA Analysis
 Handy war game

COA Comparison

COA Selection

Checklist for Planning a Self-Learning Project

1. Find a focus
2. Set realistic goals
3. Develop ideas for specific strategies and activities for learning
4. Identify resources and support systems
5. Develop an action plan
6. Execute the plan
7. Review and evaluate

Troop Leading Procedures

Receive mission
 Issue WARNING
 Make tentative plan
 Initiate movement
 Confide in troops

Complete plan
 Issue ORDER
 Scrutinize and refine

On Screen Treatments

NEXT go to SL_PA_011
 BACK go to SL_PA_009

Navigation:
 Graphics:
 Animation: Trigger actions on the navigation.
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

Narration: We have drawn some arrows to indicate some of the parallels between these two planning activities. As we review the planning and analysis strategies, these relationships will become more apparent. With these relationships and parallels in mind, let us now look at some planning and analysis strategies.

Course: Strategies for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_011
 Page Title: SL_PA_011
 Version: 0.2

Instructional Designer: SMC
 Art Director: Art Director
 Multimedia Developer: Multimedia Developer

Refining Your Self-Learning Planning and Analysis Strategies

Select each topic in order. Then select NEXT to continue.

Determine What to Learn

1

Establish Learning Goals and Milestones

2

Establish a Timeline

3

Determine Resource Requirements

4

Planning for Obstacles and Impediments

5

On Screen Treatments
 BLUE numbers are for reference only! Do not display.
 If 1 is selected go to SL_PA_012. If 2 is selected go to SL_PA_018.
 If 3 is selected go to SL_PA_023. If 4 is selected go to SL_PA_027.
 If 5 is selected go to SL_PA_029. Provide a visited state; place a ✓ on the blocks selected. Do not enable NEXT till all buttons are selected.

NEXT go to SL_PA_031.
 BACK go to SL_PA_010

11

Narration: Considering these similarities, we will address the various strategies and components associated with both professional and personal self-learning tasks and opportunities. We recommend that you review these topics and complete them in order. When you have completed all topics, select NEXT to continue.

Course: Strategies for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_012
 Page Title: SL_PA_012
 Version: 0.2

Instructional Designer: SMC
 Art Director: Art Director
 Multimedia Developer: Multimedia Developer

Determining What to Learn: Finding a Focus

On Screen Treatments

NEXT go to SL_PA_013.
 BACK go to SL_PA_011

11

Narration: Your ideas, actions, and how you review and reflect on what you learn are the keys to successful self-learning. Soldiers are busy, with lots of competing demands for their time and attention. Thinking about self-learning as a mission may help you focus your energy on a

topic over a period of time. Find and define a focus for your effort by determining just what you need to learn or be able to perform. What do you need or want to be able to do upon completion of learning.

Course: Strategies for Self-Learning


File Name: Planning and Analysis for Self-Learning
Section: SL_PA_013
Page Title: SL_PA_013
Version: 02

Instructional Designer: SMG
Art Director: M. Multimedia Developer

Examining the Task

Example Military Individual Task:

081-831-0101 Request Medical Evacuation
Conditions: You have a casualty requiring medical evacuation (MEDEVAC) and you will need a patient pickup site. You will need operational communications equipment, MEDEVAC request format, a standard scale military map, a grid coordinate scale, and unit signal operation instructions (SOIs).
Standards: Transmit a MEDEVAC request, providing all necessary information within 25 seconds. Transmit, as a minimum, line numbers 1 through 5 during the initial contact with the evacuation unit. Transmit lines 6 through 9 while the aircraft or vehicle is en route, if not included during the initial contact.



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_014.
BACK go to SL_PA_012.

Narration: Start by analyzing the learning task and determining what you need to learn. Military individual and collective tasks are generally well organized. Most provide a task statement, define conditions under which the whole task will be executed, and provide discernible and measurable performance standards. Our example task, Request Medical Evacuation, is an individual Skill Level two task. To successfully execute this task you must determine the required elements of information, accurately transmit the required elements of information, and transmit the required information in a specified amount of time.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

ProFactor:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_014
Version: 0.2

Examining the Task Steps

1. Collect all applicable information needed for the MEDEVAC request.
 - a. Determine the grid coordinates for the pickup site. (See STP 21-1-SMCT, task 073-039-1000.)
 - b. Obtain radio frequency, call sign, and suffix.
 - c. Obtain the number of patients and precedence.
 - d. Determine the type of special equipment required.
 - e. Determine the number and type (litter or ambulatory) of patients.
 - f. Determine the security of the pickup site.
 - g. Determine how the pickup site will be marked.
 - h. Determine pollutant/radiation and status.
 - i. Obtain pickup site nuclear, biological, and chemical (NBC) contamination information, normally obtained from the actor person or medic. **Note:** NBC line 8 information is only included when contamination exists.
2. Record the gathered MEDEVAC information using the authorized brevity codes. **Note:** Unless the MEDEVAC information is transmitted over secure communication systems, it must be encrypted, except as noted in step 3b(1).
 - a. Location of the pickup site (line 1).
 - b. Radio frequency, call sign, and suffix (line 2).
 - c. Number of patients by precedence (line 3).
 - d. Special equipment required (line 4).
 - e. Number of patients by type (line 5).
 - f. Security of the pickup site (line 6).
 - g. Method of marking the pickup site (line 7).
 - h. Patient nationality and status (line 8).
 - i. NBC contamination (line 9).
3. Transmit the MEDEVAC request. (See STP 21-1-SMCT, task 113-571-1022.)
 - a. Contact the unit that controls the evacuation assets.
 - (1) Make proper contact with the intended receiver.
 - (2) Use effective call sign and frequency assignments from the SCL.
 - (3) Give the following in the clear: "HAVE A MEDEVAC REQUEST," wait one to three seconds for a response. If no response, repeat the statement.
 - b. Transmit the MEDEVAC information in the proper sequence.
 - (1) State all line item numbers in clear text. The call sign and suffix (if needed) in line 2 may be transmitted in the clear. **Note:** Line numbers 1 through 5 must always be transmitted during the initial contact with the evacuation unit. Lines 6 through 9 may be transmitted while the aircraft or vehicle is en route.
 - (2) Follow the procedure provided in the explanation column of the MEDEVAC request form to transmit other required information.
 - (3) Pronounce letters and numbers according to appropriate radio/telephone procedures.
 - (4) Talk no longer than 25 seconds to transmit.
 - (5) End the transmission by stating "Over."
 - (6) Keep the radio on and listen for additional instructions or contact from the evacuation unit.

On Screen Treatments

Note: This text is provided as an example only to show a large number of task sub-elements. Increase the size of the image and allow the student to scroll through the task steps and sub-elements.

NEXT go to SL_PA_015.
BACK go to SL_PA_013.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:


Narration: This task has three performance steps. However, each performance step has multiple sub elements. The part task of transmitting a prepared message from information that someone else has provided is relatively simple, but correctly performing the whole task with its many sub elements requires in-depth knowledge and proficiency in associated skills. Learning to perform the full task, unassisted, may require the acquisition of additional knowledge or development of new skills. Analysis of this task reveals that correct performance requires knowledge and skills in map reading, operation of communication's systems, radio-telephone procedures, understanding of medical terms and patient mobility, and an understanding of tactical operations, as well as performance of the recording and transmission elements of the task.

Course: Strategist for Self-Learning

File Name: Planning and Analysis for Self-Learning
Section: SL_PA_015
Page Title: SL_PA_015
Version: 0.2

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Military Collective Tasks



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_016.
BACK go to SL_PA_014.

Narration: Leaders may desire to focus on learning or improving their knowledge of military collective tasks. Many collective tasks have characteristics similar to those discussed for individual tasks, and most are well documented by the task proponent. Most have multiple steps or aspects and have quantifiable or observable performance measures. Most require performance of prerequisite or associated knowledge and skills, all have related individual tasks, and many are associated with or related to other collective tasks. However, not all aspects of military doctrine, tactics, or procedures are so fully documented. For some, you may need to determine on your own the associated or related tasks as you plan your learning goals.

Course: Strategizer for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_016
 Page Title: SL_PA_016
 Version: 0.2

Instructional Designer: SME: Art Director: Multimedia Developer

Civilian Education

MGMT - Management

MGMT 3109. Principles of Management for Non-Business Majors (3-0-3) Prerequisite: Completion of FI with a grade of "C" or better in each course. This course discusses and analyzes planning, organizing, and controlling. It emphasizes the understanding and application of theory. Topics include motivation, leadership, workgroups, and organizational structure.

MGMT 3115. Principles of Management (3-0-3) Prerequisite: Completion of FI with a grade of "C" or better in each course. This course discusses and analyzes planning, organizing, leading, and controlling. It emphasizes the understanding and application of theory. Topics include motivation, leadership, workgroups, and other related topics.

MGMT 3125. Production and Operations Management (3-0-3) Prerequisite: Corequisite: Area A and F1 and BUSA 2115. A survey of the techniques used in the service systems.

MGMT 3135. Human Resource Management (3-0-3) Prerequisite: MGMT 2115. Practices and programs relevant to managing human resources in a modern organization.

MGMT 3136. Staffing (3-0-3) Prerequisite: MGMT 3115. This course is a staff employee recruiting and staffing. Covers the principles, practices, theories of Human Resource Management.

Management

Area A Essential Skills Required Hours: 9
[ENGL 1101](#) (with a grade of "C" or better)
[ENGL 1102](#) (with a grade of "C" or better)
 Select one of the following courses:
[MATH 1091](#) [MATH 1101](#) [MATH 1111](#) [MATH 1112](#) [MATH 1125](#) [MATH 1131](#)
 *MATH 1115 is recommended as AREA A. Business majors must complete MATH 1111 with a C or better grade for admission to BUSA 3115 and Area G courses.

Area B Institutional Options Required Hours: 4-8
[COMM 1110](#)
 Select two of the following courses:
[ITDS 1125/ITDS 1174/ITDS 1716/ITDS 1727/ITDS 2735/ITDS 1746/ITDS 2748/ITDS 2749/ITDS 2754](#) OR Select one of the following courses:
[TURK 1105](#) [LEAD 1795](#) [LBNK 1095](#) [POLS 2481](#) [HEST 1111](#) [HEST 1112](#) Foreign Language 1001, 1002, 2001, or 2002 Any Area C-E course with a study abroad component.

Area C Humanities/Fine Arts/Ethics Required Hours: 6
 Select one of the following humanities courses:
[ENGL 1111](#) [ENGL 1112](#) [ITDS 1145/ITDS 1146/ITDS 1147/PHIL 2010](#)
 Select one of the following fine arts courses:
[ARTH 1101](#) [ITDS 1145*](#) [MUSC 1106](#) [THEA 1100](#)
 *ITDS 1145, though listed under both humanities and fine arts, may be taken only once.

Area D Science/Math/Technology Required Hours: 10-31
 Select one science course with a lab; the other course may be lab or non-lab.
[ANTH 1145](#) (see lab); [ASTR 1106/1745](#) (see syllabus); [ASTR 1106/1145](#); [BIOL 1215K](#)

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_017.
 BACK go to SL_PA_015.

Narration: Your self-learning and personal development may include civilian education such as college, technical, or trade courses. These courses generally require satisfactory completion of requisite activities to receive credit or meet course objectives. Course objectives may include class attendance, participation in a special activity, satisfactory submission of papers or projects, performance of laboratory requirements, and attainment of satisfactory scores on quizzes or tests. Additionally, some courses may require demonstration of knowledge or skill proficiency for award of certifications or course credit.

Course: Strategizer for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_017
 Page Title: SL_PA_017
 Version: 0.2

Instructional Designer: SME: Art Director: Multimedia Developer

Determining What to Learn

Step 1 of Task 081-831-0101 - Request Medical Evacuation: Collect all applicable information needed for the MEDEVAC request.

Task Step Sub Element	My Status	Action
a. Determine the grid coordinates for the pickup site. [Task 071-329-3002.]	P	Need additional training and practice determining my map location using terrain association and resection.
d. Determine the type of special equipment required.	P	Require additional knowledge of "special equipment" available and applications.
f. Determine the security of the pickup site.	P	Require additional knowledge of pilot's requirements for crew/aircraft safety, probability of enemy contact, and enemy air defenses.
l. Obtain pickup site chemical, biological, radiological, and nuclear (CBRN) contamination information, normally obtained from the senior person or medic. Note: NBC line 9 information is only included when contamination exists.	U	Have only minimal training on the detection of chemical agents and symptoms of chemical or biological agents. Plan to focus on the basics now and defer detailed training on CBRN detection till later.

Proficiency

T = Trained (*)

P = Require Practice

U = Untrained

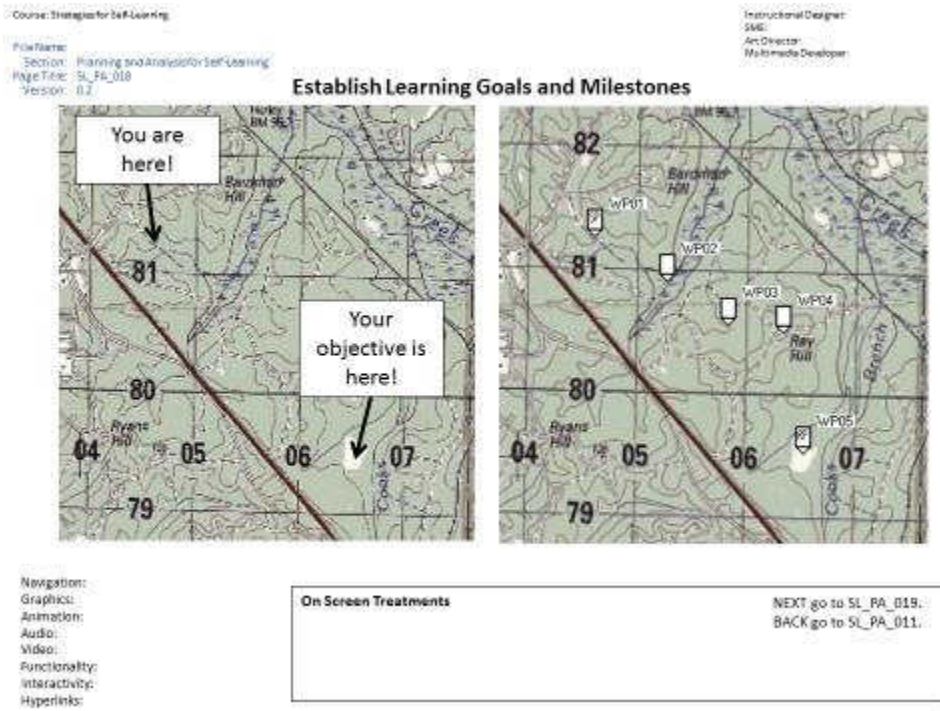
* NOTE: The student's self-assessment and analysis indicates that he is sufficiently trained and proficient (T) in task sub elements b., c., e., g., and h. of Step 1 of the Request Medical Evacuation Task.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Note: NEXT returns to the nav menu at SL_PA_011.
 NEXT go to SL_PA_011.
 BACK go to SL_PA_016.

Narration: Determining what to learn for professional as well as personal self-learning and development should include a detailed analysis of the knowledge and skills required for satisfactory performance and understanding of the task or skill. In this example, a student has listed sub elements of the task that require additional self-learning. Note that the student has identified foundation knowledge and related or associated tasks and skills. While simple or one-time efforts may require little consideration, more complex efforts can be performed more effectively with more structured analysis and planning, identifying or listing the knowledge and skills to be learned.



Narration: Self-learning is similar to planning and executing a tactical mission or finding your way using land navigation. Like navigating to the correct point on the ground, you must plan your route and set intermediate goals or way points. By attaining the intermediate goals you advance toward and reach your objective.

Course: Strategies for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_019
 Page Title: SL_PA_019
 Version: 0.2

Instructional Designer: SME: Art Director: Multimedia Developer:

Framing SMART Goals and Milestones

- **S** • SPECIFIC
- **M** • MEASURABLE
- **A** • ATTAINABLE
- **R** • RELEVANT
- **T** • TIME BOUND

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments NEXT go to SL_PA_020.
 BACK go to SL_PA_018.

Narration: Like waypoints along your route, well crafted intermediate goals and milestones help assure progress toward the desired end-state or final goals. The term SMART will assist you in developing appropriate intermediate and final goals for your self-learning. They will help you manage your time, your resources, guide your decisions, and assure effective efforts. Since much of your self-learning may be self-driven, motivation and goal setting go hand-in-hand. Goals provide the direction you need to reach your destination, help provide the motivation to keep you going, and give you a means of determining or measuring your progress.

Course: Strategies for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_020
 Page Title: SL_PA_020
 Version: 0.2

Instructional Designer: SME: Art Director: Multimedia Developer:

Developing SMART Goals and Milestones

SMART Goal Preparation Form

1. **GOAL:** [Write your goal here]
2. Next, identify the specific elements that make it a S.M.A.R.T. goal:

SPECIFIC:	
MEASURABLE:	
ATTAINABLE:	
RELEVANT:	
TIMELY:	
3. Lastly, revise your goal if needed based on the above elements.

S.M.A.R.T. Goals - In order to be S.M.A.R.T., a goal needs to be:

SPECIFIC:	A general goal would be "improve PT score." A specific goal would be, "improve PT score to 275 or higher for approval to go to Air Assault school"
MEASURABLE:	To determine if your goal is measurable, ask questions such as, "How much? How many? How will I know if and when I have accomplished my goal?"
ATTAINABLE:	Something you are capable of achieving.
RELEVANT:	Because we are focusing on work-related self-learning, your goals should be job-specific and focus on work important to the organization's success.
TIMELY:	A goal should be grounded with a time frame. With no time frame tied to it, there is no sense of urgency.

Writing S.M.A.R.T. goals can take a little practice. Refer back to the learning need(s) you have identified. Write one or more short-term S.M.A.R.T. goals that will help you achieve a learning need.

PRINT THE SMART GOAL FORM

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments Print the SMART Goal form when the button is selected. NEXT go to SL_PA_021.
 BACK go to SL_PA_019.

Narration: End and intermediate goals will be developed from the results of your analytical efforts to determine what to learn. The term SMART (say with emphasis) should be used to make the goal statements actionable, determining and providing the direction and details needed to measure achievement and accomplish or attain the goal within the desired timeframe. Intermediate milestones should clearly support attainment of your final goal. This format may assist you in writing actionable goals and milestones for your self-learning.

Course: Strategies for Self-Learning

Instructional Designer:

File Name:

SMG:

Section: Planning and Analysis for Self-Learning

As-Director:

Page Title: SL_PA_020

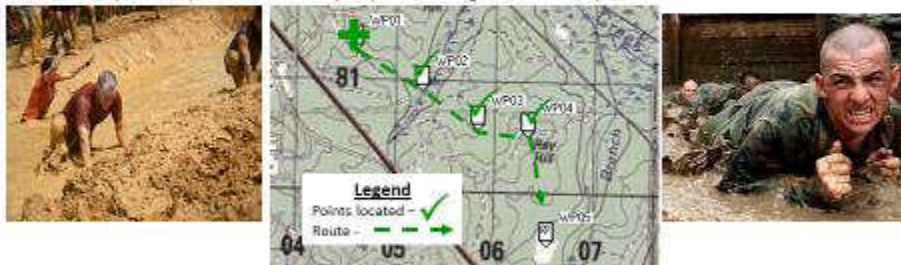
Multimedia Developer:

Version: 02

Self-Learning Motivation

Your self-motivation has many dimensions. It is influenced by several factors, among them are:

- 1) Your level of initiative to set challenging goals for yourself.
- 2) Your belief that you have the skills and abilities needed to achieve your goals.
- 3) Your expectation that if you put in enough hard work, you will succeed.



Thus far in your military career you may have already achieved successes through self-motivation.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_022.
BACK go to SL_PA_020.

Narration: Let us briefly consider the role of motivation in your self-learning. Staying motivated is a critical element to your success in combat, in demanding training, as well as in self-learning. One reason for taking the time to identify and establish realistic goals is because they have a powerful effect on your motivation to continue and complete self-learning projects or efforts.

Course: Strategies for Self-Learning

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_022
 Page Title: SL_PA_022
 Version: 0.2

Instructional Designer: SMC
 Art Director: Multimedia Developer

Goals and Motivation

Research suggests that high levels of self-motivation are linked to the following four factors:

- Focus and strong goals
- Self-confidence and belief in yourself
- Positive thinking, specifically positive thinking about the future
- A motivating environment

By working these factors together, you can improve your self-motivation.



Valley Forge
16 February 1778
 "Naked and starving... we cannot enough admire the incomparable patience and fidelity of the soldiery." – G. Washington

America's history is filled with examples of NCOs motivating themselves and others to overcome adversity, achieve goals, and accomplish great deeds.



Yorktown
14 October 1781
 Charging with unloaded muskets and fixed bayonets Redoubt No. 10 was overwhelmed in ten minutes.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_011.
 BACK go to SL_PA_021.

33


Narration: One reason for taking the time to identify and establish goals is because goals have a powerful effect on your motivation to begin, continue, and complete self-learning projects or efforts. Some goals will be short-term; for example, learning a skill in your new job. At other times, you will have long term goals associated with planning your career, preparing for an assignment, improving chances for promotion, or completing a college degree.

Course: Strategies for Self-Learning

File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_023
 Page Title: SL_PA_023
 Version: 0.2

Instructional Designer: SMC
 Art Director: Multimedia Developer

Establishing a Timeline: Drafting a Plan



Manage your time!
Don't fight the clock.

Every milestone requires at least a minimal amount of planning. Once you set your first milestones and goals, create a plan to achieve them. A plan will increase your chances of success by:

- Making sure that you have identified all of the actions you must take.
- Identifying the resources and time that you will need to meet the milestone.
- Establishing time estimates and deadlines that help you track your progress.
- Keeping you from being overwhelmed by dividing large tasks into bite-sized pieces.
- Identifying obstacles that you may encounter and the actions and resources that you will need to overcome them.
- Helping you make the best use of your time and other resources.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Animate the hands. Loop the movement to depict the effort and losing battle to hold back the clock.

NEXT go to SL_PA_024.
 BACK go to SL_PA_011.

33

Narration: Having identified what you need to learn and established SMART goals for your self-learning project, it is time to pull together an action plan. Time can be an ally, but it

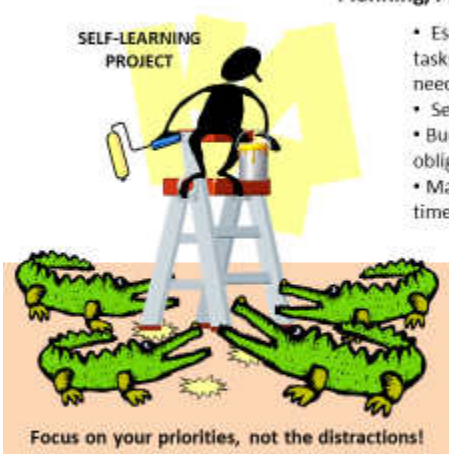
frequently becomes your greatest enemy in self-learning. Time management is an essential skill, you cannot fight the clock, but you can manage it. Establish deadlines to track progress and a timeline to assure the efficient and effective use of available time.

Course: Strategies for Self-Learning

File Name: Planning and Analysis for Self-Learning
Section: SL_PA_024
Page Title: SL_PA_024
Version: 0.2

Instructional Designer:
SMG:
Art Director:
Multimedia Developer:

Planning, Priorities, and Time



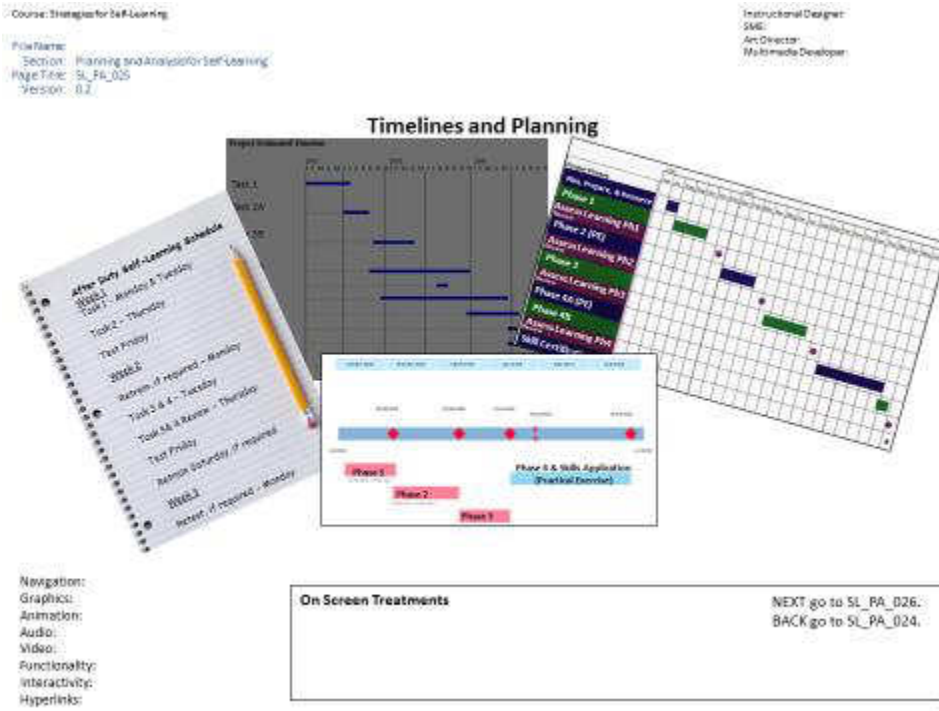
- Establish a path for the self-learning project by prioritizing tasks and goals and indentifying the most essential things needed to achieve your goals.
- Set realistic time estimates for required tasks and goals.
- Budget adequate time for routine duties, family, and other obligations, as well as self-development.
- Manage your work, time, and personal life to optimize the time available for personal development:
 - Take care of yourself – eat, exercise, and rest to function your best
 - Look for ways to accomplish the routine tasks more efficiently – combine errands, etc.
 - Learn to quickly locate and or retrieve information that you need for self-development and requirements of daily life.
 - Organize your work and living area so information, tools, and workspace are available when needed.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_025.
BACK go to SL_PA_023.

Narration: For maximum payoff and successful planning you need to set priorities, make realistic estimates of time requirements, and budget your time. There are always competing requirements and potential conflicts. Without prioritization and planning these conflicts may overwhelm or subvert your efforts. You may find that deliberate self-development requires some lifestyle changes. Self-learning may require that you deliberately plan for or deconflict other requirements for your time and energies.



Narration: Your timeline and plan can take many forms. Some may be as simple as notes on the calendar, on your refrigerator at home, or in your pocket notebook. You may use Outlook on your home PC or the My Calendar function in Army Career Tracker. Microsoft Office Tools and other software packages provide other useful tools for planning and time management for long-term or complex efforts. Whatever tools or job aids you use, set a timeline. A timeline should be a defined take-away in planning. Setting a defined schedule helps fight procrastination. A timeline helps impose self-control and management, reducing stress to meet goals. It helps you determine where you are now, where you are going, and supports adjustment of plans when required.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_026
Version: 0.2

Reviewing Your Timeline and Plan



Good leaders help develop their subordinates.

Once you've completed your plan, consider showing it to a mentor, supervisor, or friend for feedback. Reviewing the following questions together can assist in assessing your plan and keeping it on track and moving forward:

1. Do the learning objectives describe what you propose to learn?
2. Are the learning objectives clear, understandable, and relevant?
3. Are there other objectives you might consider?
4. Are your timelines and estimates realistic and accurate?
5. Do the learning strategies and resources seem reasonable, appropriate, and efficient?
6. Are there other resources and strategies you might consider?

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_011.
BACK go to SL_PA_025.

Narration: Having a self-learning support network can be extremely helpful. A supervisor, mentor, or experienced friend can not only provide a second set of eyes but can be most helpful when assessing your learning needs, developing goals, writing an action plan, reviewing it, and even keeping you accountable. Good leaders should be interested and involved in the development of their subordinates. Keeping your supervisor aware and involved with your self-learning efforts can help you become more successful. Additionally, take an interest in the self-development plans of your subordinates.

Course: Strategies for Self-Learning

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_027
Version: 0.2

Determine Self-Learning Resource Requirements



Self-Learning Resources may include:

- People – subject matter experts, skilled trainers, etc.
- Documents, publications, and books – doctrinal publications, tech manuals, procedural manuals, and lessons learned publications
- Interactive multimedia instruction – web and CD-ROM delivered
- Simulations and simulators
- College, trade, and technical courses of study – degrees, certifications, and course completion
- Specialty (how-to) courses – mountaineering, survival, marksmanship, and law enforcement/emergency response
- Army Knowledge Online
- Other information and research websites

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_028.
BACK go to SL_PA_011.

Narration: Learning resources are the people, books, documents, CDs, websites, and other materials and experiences that will help you achieve your learning goals. Most military tasks are documented in doctrinal publications and references. As you determine what to learn, you should also begin to assemble resources such as web sites, documents, e-learning courseware, and lists of contacts or experts that you may use to facilitate your learning. For Soldiers, a golden key to learning resources is available through Army Knowledge Online.

Course: Strategies for Self-Learning

File Name:
Section: Planning and Analysis for Self-Learning
Page Title: SL_PA_028
Version: 02

Instructional Designer:
SMG:
App. Director:
Multimedia Developer:

Accessing Learning Resources



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_011.
BACK go to SL_PA_027.

Narration: A. K. O. provides 24/7 access to army email, directory services, blogs, file storage, instant messenger, and chat as well as links and access to other related army websites such as the Army Training Requirements and Resources System and the Army Learning Management System. We will discuss some of the details concerning finding and accessing learning resources in a later module of this course. However, for now, it is sufficient that you understand that A. K. O. provides access to an extensive network of learning information, tools, and resources.

Course: Strategist for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_009
 Page Title: SL_PA_009
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Planning for Obstacles and Impediments

Note from the First Sergeant

From the Desk of the Company First Sergeant
 1/24/2014

To: SSG Smith
 SFC Rose, 1st PLT SGT

- SSG Smith will have Brigade Staff Duty next Tuesday.
- The duty roster has been adjusted. SSG Tankin is unavailable for 2 weeks.
- His wife was seriously injured in a car accident yesterday afternoon.
- See me for details ASAP. BDE CSM is out next week and wants to pre-brief the Duty NCOs.

J. R. Hardtack
 1st SGT

SSG Smith's Self-Learning Schedule

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_030.
 BACK go to SL_PA_011.

Narration: You will encounter obstacles and challenges as you execute your self-learning plan. However, be resource and conflict conscious when planning. For example, if you anticipate being deployed within the next 6 months, don't set a milestone that will require attendance of a resident college course. Always build flexibility into your plans so obstacles can more easily be overcome or milestones can be revised, for example, that unexpected change to the duty roster.

Course: Strategist for Self-Learning
 File Name: Planning and Analysis for Self-Learning
 Section: SL_PA_009
 Page Title: SL_PA_009
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Adjusting the Plan for Obstacles and Impediments

SSG Smith's Adjusted Self-Learning Schedule

Working Without a Plan

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_PA_011.
 BACK go to SL_PA_029.

Narration: A flexible plan allows you to take actions and make adjustments while remaining focused on your priorities and goals. Self-learning without a plan limits your ability to

react to changes and obstacles. Without a flexible plan, frustrations may run high, motivation may drop, and attaining desired goals may become too difficult.

Course: Strategies for Self-Learning

File Name: Planning and Analysis for Self-Learning
Section: SL_PA_001
Page Title: SL_PA_001
Version: 0.2

Instructional Designer:
SAC:
Art Director:
Multimedia Developer:

Self-Learning Planning and Analysis Summary

1. Determine what you need to learn and the goal of your self-learning efforts.
2. Determine what you should be able to do, perform, or know after learning.
3. Break down the learning task into smaller parts, milestones, or subtasks.
4. Develop a step-by-step plan to reach the milestones and ultimate goal.
5. Determine how to pace the learning to minimize conflicts with other obligations.
6. Prioritize the tasks or topics that need to be covered.
7. Track progress toward the milestones and goal.
8. Determine and set a deadline to complete learning or deliver the product.

Select NEXT to continue or BACK to return to the instructional menu for this module.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to 5_SL_I_0??
BACK go to SL_PA_011

NEXT goes to the Intro Module Selection Menu SL_I_??

Narration: Here is a summary of the learning strategies associated with self-learning planning and analysis. Review this list and select NEXT to continue or BACK to return to the instructional menu for this module.

APPENDIX J: STORY BOARDS - A LEG UP ON SELF-
LEARNING: STRATEGIES FOR SUCCESS: MODULE 4: INFORMATION SEEKING

Course: Strategies for Self-Learning

File Name: InformationSeeking
Section: S_L_IS_001
Page Title: S_L_IS_001
Version: 0.1

Instructional Designer:
SAC
Art Director:
Multimedia Developer

Finding Learning Resources



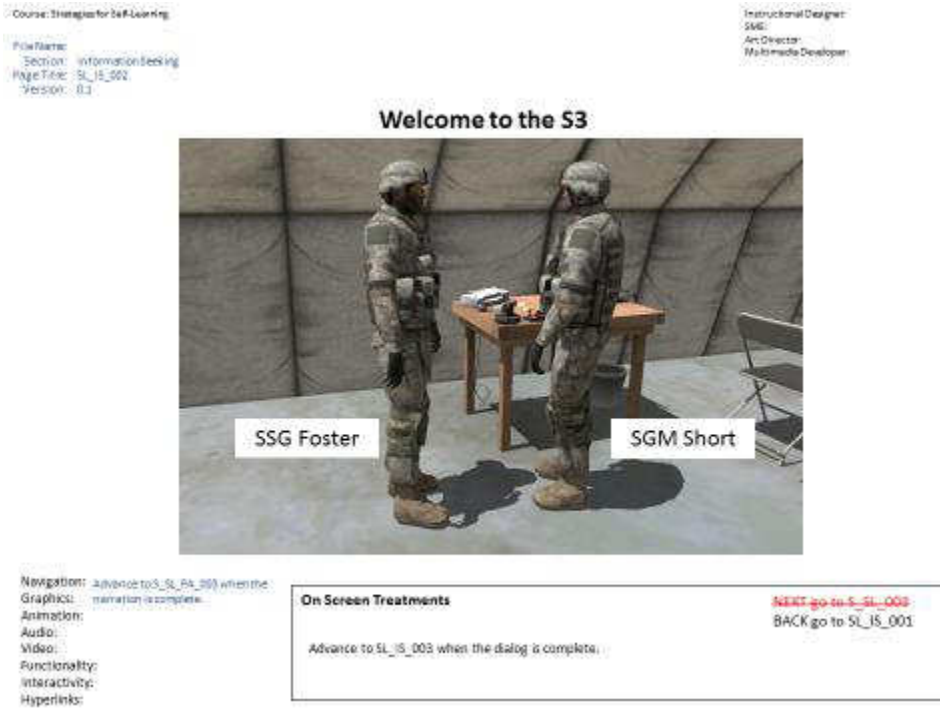
Navigation: Advance to S_SL_IS_002 when the
Graphics: narration is complete.
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments
Still of mentor addressing the student.
Advance to S_SL_IS_002 when the narration is complete.

NEXT go to S_SL_002
BACK go to SL_I_MENU

Narration:

MENTOR: Good day Sergeant, have you checked the expiration date on your library card lately? You don't have one? Don't remember where it is? When you have to learn a new skill, where do you go to get information or gather the resources to help you? Some self-learners may be completely in the dark, but others may have figured out how to use the wide variety of resources available to them. Let's catch up with Staff Sergeant Foster. Twice recently he was observed by the Battalion Commander doing a great job training his squad. He is being transferred to the S3 shop. Sergeant Foster thinks that he will be the new training NCO, but the Operations Sergeant Major has other ideas. Let's join them at the battalion command post and listen in.



Narration:

SGM Short: Staff Sergeant Foster, welcome to the S 3. I hope you are cleared out of your company and ready to get to work. Let's take a quick ride up the hill and talk about your new assignment. (PAUSE) I want to show you something.

SSG Foster: Sure Sergeant Major, let's go. I understand my new duty will be Training NCO.

SGM Short: Well that was Plan A (PAUSE), but (PAUSE) we just lost Sergeant First Class Earl. He got pulled up to Brigade. Plan B is a little different. You are being assigned to different duties.

Course: Strategies for Self-Learning
File Name:
Section: Information Seeking
Page Title: SL_IS_003
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Play video – IMI Norm FLR

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to S-SL_004
BACK go to SL-IS_003

Open player, auto play video, close player and advance to SL_IS_004 when the video is complete.

Course: Strategies for Self-Learning
File Name:
Section: Information Seeking
Page Title: SL_IS_004
Version: 0.1

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Observing Close Air Support in Action



On Screen Treatments

NEXT go to S-SL_005
BACK go to SL-IS_003

Advance to SL_IS_005 when the dialog is complete.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

Narration:

SGM Short: Well, Staff Sergeant Foster, what did you think? That was a great example of close air support in action.

SSG Foster: It sure was impressive.

SGM Short: Yes and that will soon be yours. You will be our new S3 Air NCO assisting Captain Dover.

SSG Foster: S3 Air NCO?! Sergeant Major, I'm flattered, but I don't have any experience

.....


SGM Short: (Quickly cut in) Experience? Look Sergeant, you will learn all about it. Close Air Support, Army Attack Aviation, air movement, load planning, lift support, it is all about the same. You get started Monday! We won't be able to get you to school for a while, but just jump in with both feet! Captain Dover is new too. You can learn together.

Course: Strategies for 21st Learning

File Name: Information Seeking
Section: SL_15_005
Page Title: SL_15_005
Version: 03

Instructional Designer: SSG
Art Director: Multimedia Developer

Where Can You Find Learning Resources to Help You?



Navigation: Enable NEXT when narration ends.
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Still with SSG Foster in the background thinking with Air Force and Army aircraft circling around his head. The mentor in right foreground is addressing the student.

NEXT go to SL_15_006
BACK go to SL_15_001

Narration:

MENTOR: Well Staff Sergeant Foster was looking for a change of scenery and a way to broaden his experience after being a hard charging squad leader. However, he didn't expect this. He has just become the S3 Air NCO with duties far different than what he expected; duties well outside his comfort zone. If you were in his place, would you know where to find resources to help you learn about a new job or duties? Would you know where to go, what to look for, or who to tap into? Put yourself in this situation. Think about it a minute then select NEXT to begin your self-assessment.

Course: Strategies for Self-Learning
 File Name: Information Seeking
 Page Title: SL_15_006
 Version: 0.1

Instructional Designer: SMC
 Art Director: Multimedia Developer

NCO Self-Learning Strategies Scenario Scale: Information Seeking

The table below provides a list of various learning strategies that NCOs have reported using to learn on their own. For each learning strategy listed, please rate how relevant it would be in your approach to learning in this or a similar scenario. Select the submit button when your selections are complete.

	Not Relevant	Somewhat Relevant	Relevant	Very Relevant	Essential
Identifying my most likely sources of good information (e.g., libraries, Google, CALL)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collecting examples of completed work (e.g., briefings, NCOERs) to use as a model	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thinking about experiences I have had (or examples I know about) to help me make sense of what I am learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seeking opportunities to learn things hands-on; getting someone to show me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting my learning with computer programs, CDs, videos (e.g., language learning software)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keeping a list, spreadsheet, notebook, etc., to track the resources I have collected and read	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SUBMIT

Navigation: Graphics: Animation: Audio: Video: Functionality: interactivity: Hyperlinks:

On Screen Treatments
 Selection of submit will cause computation of the average score for these factors and display that value on SL_15_007.
 Values are: NR=1, SR=2, R=3, VR=4, E=5.
 Require selection of a value for each (row) Learning Strategy, compute value and advance when SUBMIT is selected.

NEXT on SUBMIT go to SL_15_007
 BACK go to SL_15_005

Narration: Consider the situation you observed. Put yourself in Sergeant Foster's place and rate the relevance of each of the Learning Strategies listed. There is no right or wrong selection. Your honest response will provide you with the most accurate self-assessment. After you have determined the relevance of each strategy, click on the submit button to compare your self-assessment to peers and others.

Course: Strategies for Self-Learning
 File Name: Information Seeking
 Page Title: SL_15_007
 Version: 0.1

Instructional Designer: SMC
 Art Director: Multimedia Developer

Your Score for Information Seeking

DATE: _____

Rank			
	SGT	SSG to SFC	MSG/1SG >
1	2	1	2
2	7	6	12
3	29	29	31
4	39	44	40
5	24	20	16

Career Management Field			
	Combat Arms	Combat Support	Combat Service Support
1	1	1	1
2	7	6	8
3	31	30	26
4	43	38	43
5	18	26	22

Your Score

PRINT

SAVE

Civilian Education			
	GED/H.S.	Some College	College Degree
1	2	1	1
2	7	6	9
3	30	29	29
4	38	43	40
5	24	21	20

Time in Service (years)			
	0 to 5	5 to 10	10 +
1	2	2	2
2	6	7	7
3	27	30	29
4	34	40	44
5	32	22	18

Navigation: Graphics: Animation: Audio: Video: Functionality: interactivity: Hyperlinks:

On Screen Treatments
 Display the computed number from SL_15_006 and date.
 SAVE: permits the student to save this page (MS Office product or PDF) to the desktop or a designated file on the computer being used.
 PRINT: permits the student to print this page if the computer is connected to a printer.

NEXT go to SL_15_008
 BACK go to SL_15_006


Narration: Now compare your score for the relevance of Information Seeking strategies in self-learning to your peers and others. If your score is equal to or below those of your peers or

more senior NCOs, you may have some work to do. You may see the impact reflected in incomplete or ineffective learning plans or in your incomplete knowledge on subjects after learning. It may also reflect in the poor problem solving when you encounter an issue related to your new knowledge or skills. Scoring higher than your peers may indicate that your information seeking skills and strategies are a strength that you should build on. Subordinates and peers may look at you as a subject matter expert or the go to guy for a particular skill or knowledge area. You may not always have an answer, but you know where to quickly find the correct answer or additional information. You may print or save this data for future reference.

Course: Strategies for Self-Learning
File Name:
Section: Information Seeking
Page Title: SL_15_008
Version: 0.1

Instructional Designer:
SMG
Art Director:
Multimedia Developer

How Do You Find the Right Resources?



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Character digs through books, finds one, discards it, and digs some more.

NEXT go to SL_15_009
BACK go to SL_15_007

Narration: Perhaps the fundamental question is, “How do you find the right resources and information to support your learning?” This topic will provide you with some tips, considerations, and approaches, (PAUSE) strategies to use when seeking resources for a new self-learning effort.

Course: Strategies for Self-Learning
 Instructional Designer: SAM, Art Director: Multimedia Developer

File Name: Information Seeking
 Section: SL_IS_008
 Page Title: SL_IS_008
 Version: 0.1

Examining Information Seeking Strategies

Select each item to learn more about self-learning strategies for information seeking. After you have examined each of the strategies, select Next to continue.

Numbers in Blue are provided for reference ONLY do NOT display!

- 1 Identify a variety of good sources for information, models, and examples.
- 2 Assess the materials you find to assure that they support learning, then list and track those that you select, collect, and read.
- 3 Find or make opportunities for hands-on learning, demonstrations, and/or quality multimedia materials.

On Screen Treatments
 BLUE numbers are for reference only! Do not display.
 If 1 is selected go to SL_IS_010. If 2 is selected go to SL_IS_025.
 If 3 is selected go to SL_IS_031. Provide a visited state; place a ✓ on the blocks selected. Do not enable NEXT till all buttons are selected.

NEXT go to SL_SM_035, when unlocked.
 BACK go to SL_SM_008

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:


Narration: Select each item to learn more about information seeking strategies. After you have examined each of the strategies select Next to continue.

Course: Strategies for Self-Learning
 Instructional Designer: SAM, Art Director: Multimedia Developer


File Name: Information Seeking
 Section: SL_IS_010
 Page Title: SL_IS_010
 Version: 0.1

Identify (the BEST) Sources of Information


People




Books & References



Courses & Courseware



Books & References



People

Courses & Courseware

Numbers in Blue are provided for reference ONLY do NOT display!

1	People
2	Books & References
3	Courses & Courseware

On Screen Treatments With a blank page and introduce the 3 large color circles with symbols as mentioned in the narration. At PAUSE 3, bring circles together with computer/smart phone in the middle and insert navigation menu. Note: BLUE numbers are for reference only! Do not display. If 1 is selected go to SL_IS_011. If 2 is selected go to SL_IS_018. If 3 is selected go to SL_IS_022. Provide a visited state; place a ✓ on the blocks selected. Do not enable NEXT till all buttons are selected. Show visited state ✓ on MENU; disable narration on return to this MENU.

NEXT go to SL_IS_009, when unlocked.
 BACK go to SL_SM_009

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

Narration: Sources of information that support self-learning fall into three categories: people, (PAUSE) books and references, (PAUSE) and courses and courseware. People include but are not limited to peers, your supervisor and superiors, mentors, and teachers. Books and references include publications such as military field and technical manuals, references written by experts, magazine articles, and volumes from electronic libraries. Courses and courseware

include classes, courses, as well as media structured for learning, distance learning, and correspondence courses. (PAUSE) Far from separate independent categories, they merge, blend, and are sometimes interconnected. You can access many of these sources through your personal computer, iPad, or smart phone. Select each topic to learn more.

Course: Strategies for Self-Learning

File Name: Information Seeking
Section: SL_15_011
Page Title: SL_15_011
Version: 0.1

Instructional Designer: SME
Art Director: Multimedia Developer

The Right People: Valued Learning Resources

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments
Open the frame with "YOU" in the middle. Slowly insert each image with caption and double arrow beginning with **Peers** and continuing clockwise till **Unit Personnel & Staff Elements** are displayed.

NEXT go to SL_15_012
BACK go to SL_15_010

Narration: People can be one of your greatest resources for self-learning, but when you don't manage their time or use their knowledge or experience wisely, people can be a distracter and detriment to learning. In the context of self-learning you must qualify their beneficial talents and expertise, be considerate of their time, and appropriately tap their knowledge, skills, and experiences to advance your learning. Be sure to avoid the temptation to sit around and socialize, or when all is said and done, much more may get said than done. Select NEXT to examine potential benefits, considerations, and best practices when using these various categories of people as learning resources.

Course: Strategies for Self-Learning
File Name:
Section: Information Seeking
Page Title: SL_15_012
Version: 0.1

Instructional Designer:
SMG:
Art Director:
Multimedia Developer:

Peers as a Learning Resources



Some peers can be great study or project partners.

Peers are accessible and often have similar goals, training, and experiences. Peers can:

- Provide insight (though potentially biased) on courses or training that they have completed.
- Provide tips, notes, annotated course materials, or preparation guidance for courses they attended.
- Recommend resources, other experiences, or pre-training activities to enhance/improve your learning experiences.
- Warn you about potential problems and pitfalls.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open the frame with initial paragraph ending with "Peers can:", then slowly expose the bullets.

NEXT go to SL_15_013
BACK go to SL_15_011

Narration: Peers can provide a great deal of support and knowledge during your self-learning quest. Your peers may have the same or similar learning and development goals. They may face or have faced similar challenges during their learning experiences. Their support is distinct from other forms of social support in that peers offer support by virtue of relevant experience. For example, your peer may have "been there, done that recently" and can relate to others who are now in a similar situation.

Course: Strategies for Self-Learning
File Name:
Section: Information Seeking
Page Title: SL_15_013
Version: 0.1

Instructional Designer:
SMG:
Art Director:
Multimedia Developer:

Superiors and Mentors as a Learning Resources



Your supervisor, superiors, and your mentor should also be accessible. Some will have already achieved goals similar to your own. They can:

- Provide excellent insight on training that you should complete.
- Provide tips and point you to good learning materials.
- Recommend experiences, training, or career steps.
- Warn you about potential problems. This may include steering you away from bad learning resources and experiences.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open the frame with initial paragraph ending with "They can:", then slowly expose the bullets.

NEXT go to SL_15_014
BACK go to SL_15_012

Narration: Supervisors, superiors, and mentors are skilled in areas of their profession. Many have special interests. Over time they have gained experience and may have acquired extensive information and resources throughout their years of service. They have been where you are in your career and have not only survived but advanced, serving in positions of increased authority and responsibility. Most are willing to share their knowledge and skill to improve your performance and promote unit success. Your supervisor has a vested interest in your success. If your supervisor does not have the right information or resources [on hand], he or she can [likely] point you in the right direction.

Course: Strategies for Self-Learning

File Name: InformationSeeking

Section: SL_18_014


Page Title: SL_18_014

Version: 0.1

Instructional Designer: SMC


Art Director: Multimedia Developer

Professors and Teachers as Learning Resources



Those who teach often measure their success in terms of your success. What they know and can do, as well as their understanding of the institution, can benefit your learning. They can:

- Provide advice on subject matter.
- Help you better understand course materials.
- Recommend additional study resources.
- Clarify policies, procedures, and standards.
- Provide extra time to complete assignments due to duty mission requirements.



Additionally, professors, teachers, and trainers may sometimes schedule group or individual reviews, additional instructional time, or remediation.

On Screen Treatments

Open the frame with initial paragraph ending with "They can"; then slowly expose the bullets and the sentence "Additionally, teachers".

NEXT go to SL_15_015

BACK go to SL_15_013

Navigation:

Graphics:

Animation:

Audio:

Video:

Functionality:

Interactivity:

Hyperlinks:

Narration: Teachers, professors, and training professionals in trade schools, adult education programs, and college courses should also be considered learning resources. If your self-learning plans include college or trade courses, your first steps can be intimidating. For example, few students make it through college without seeking assistance from a professor at one time or another. Professors and teachers are often subject matter experts within their area of concentration. They have a wealth of knowledge in their field of expertise, and they are familiar with procedures and policies of their institution. The Army is a big customer for many of these institutions and you may be paying substantial fees; (PAUSE) get your money's worth.

Course: Strategies for Self-Learning
 FileName: Information Seeking
 Section: SL_15_015
 Page Title: SL_15_015
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Military Trainers as Learning Resources



Military trainers provide direct instruction and serve as small group facilitators. Trainers are good learning resources. They can:

- Provide advice on their subject matter.
- Assist in improved understanding of course materials.
- Recommend additional study resources or training activities.
- Clarify institutional policies, procedures, and standards.
- Provide extra training opportunities.

However, Army trainers are assigned to their duties as trainers. Just as all subject matter experts may not be good trainers, not all trainers are subject matter experts.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Open the frame with initial paragraph ending with "They can", then slowly expose the bullets. Insert the last sentence, "However, Army trainers" at the end of the narration.

NEXT go to SL_15_016
 BACK go to SL_15_014

Narration: Army trainers should also be considered as learning resources. If your self-learning plans include subject matter beyond course content or you are preparing for future training, they may be able to assist. Keep in mind that while Army instructors may be competent in the subject matter that they train, they may not be subject matter or domain experts. For example, all drill sergeants should be able to train basic marksmanship skills, but not all drill sergeants fire expert every time they qualify with their individual weapon.

Course: Strategies for Self-Learning
 FileName: Information Seeking
 Section: SL_15_016
 Page Title: SL_15_016
 Version: 0.1

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Subject Matter Experts as Learning Resources



Subject matter experts (SMEs) may be excellent sources for self-learning. However, you should only use qualified experts. The statements below may assist you in identifying an SME. They have:

- Actually done the work.
- Been certified by external assessment.
- Written or spoken on the subject.
- Been selected to assess the work of others.
- Accurate, up-to-date information.
- Understanding of best practices and the needs of other practitioners.
- A documented history of quality performance.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Open the frame with initial paragraph ending with "...as an SME.", then slowly expose the bullets.

NEXT go to SL_15_017
 BACK go to SL_15_015

Narration: A subject matter expert can generally be an excellent source for information concerning a specific task or area. True subject matter experts exhibit a high level skill of and performance, and contribute to unit mission accomplishment. Learning from or observing experts may save you time and increase your understanding when learning. They may provide behaviors to model, tips to accomplishing tasks, and may be able to demonstrate aspects of tasks difficult to understand through reading or other media. They may also be a source of finished work, (PAUSE) models you can use as examples. However, keep in mind that not all subject matter experts are effective trainers.

Course: Strategies for Self-Learning

File Name: InformationSeeking

Section: InformationSeeking

Page Title: SL_15_017


Version: 0.1

Instructional Designer: SME

Art Director: Multimedia Developer


Unit Personnel as Learning Resources

Supply Room



Your unit Supply Section may already store some training aids and may help you obtain needed training aids and devices from your supporting TASC.

S3 Section



Your supporting S3 Section can be a resource for:

- Coordinating training opportunities outside of your unit.
- Coordinating for training resources or facilities.
- Current training publications and materials
- Information on military schools

On Screen Treatments

Open the frame with image, captions, and text above the BLUE --- line. At the PAUSE display the image, captions, and text below the BLUE line. Do Not display the BLUE line.

NEXT go to SL_15_010
BACK go to SL_15_016

Navigation: Graphics: Animation: Audio: Video: Functionality: Interactivity: Hyperlinks:

Narration: Staff sections and elements available in units are frequently overlooked as learning resources. Your unit supply section may store some training aids and training devices, and they may manage the unit account with the local Training Audiovisual Support Center. Through your unit supply you may be able to access training devices, aids, and simulators available in the Army. (PAUSE) Your S 3 training staff may be able to coordinate training with other units, forecast and obtain training resources and facilities, and assist in obtaining the most current training publications and resources. Additionally, the S 3 section is the conduit for military schools allocations and requisitions. They may be able to assist you in requesting or preparing for courses. Okay, we have looked at people, now examine other learning resources.

Course: Strategies for Self-Learning
 File Name: Information Seeking
 Page Title: SL_15_018
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Books and Publications: Valued Learning Resources



Libraries provide traditional services:

- Loaning books and publications
- Accessing reference libraries and librarians

Additionally, some libraries provide:

- Free access to computers and the internet
- Online research services
- Apps-based access to materials and programs
- Navigation apps to locate resources and materials
- "Redbox"-style lending machines or kiosks located throughout the community
- "Amazon"-style customized book/audio/video recommendations

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

Open the frame with image and text above the **BLUE** --- line. At the pause display the image, captions, and text below the **BLUE** line. Do Not display the **BLUE** line. .

NEXT go to SL_15_019
 BACK go to SL_15_010

Narration: Books and publications remain valuable resources to support self-learning and self development. Even with the advent of the digital age, the world is by no means paperless. While the less informed may think that libraries are obsolete or out of date, most libraries have updated their services to accommodate new technologies. (PAUSE) While libraries typically offer access to tens of thousands of printed books, periodicals, and other publications, they also provide access to e-books, digital or digitized periodicals, and other services to improve convenience and accessibility to resources.

Course: Strategies for Self-Learning
 File Name: Information Seeking
 Page Title: SL_15_020
 Version: 0.3

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Military & MWR Libraries

TRADITIONAL SERVICES

- Books
- DVDs
- Periodicals
- Professional Journals

HISTORICAL DOCUMENTS

- After Action Reports
- Case Studies
- American History
- Military History
- Situation Reports
- Official and Unofficial Unit Histories

OFFICIAL PUBLICATIONS

- Regulations
- Doctrine and Doctrinal References
- Technical and Training Materials
- Pamphlets
- Administrative References

PROGRAMS of INSTRUCTION

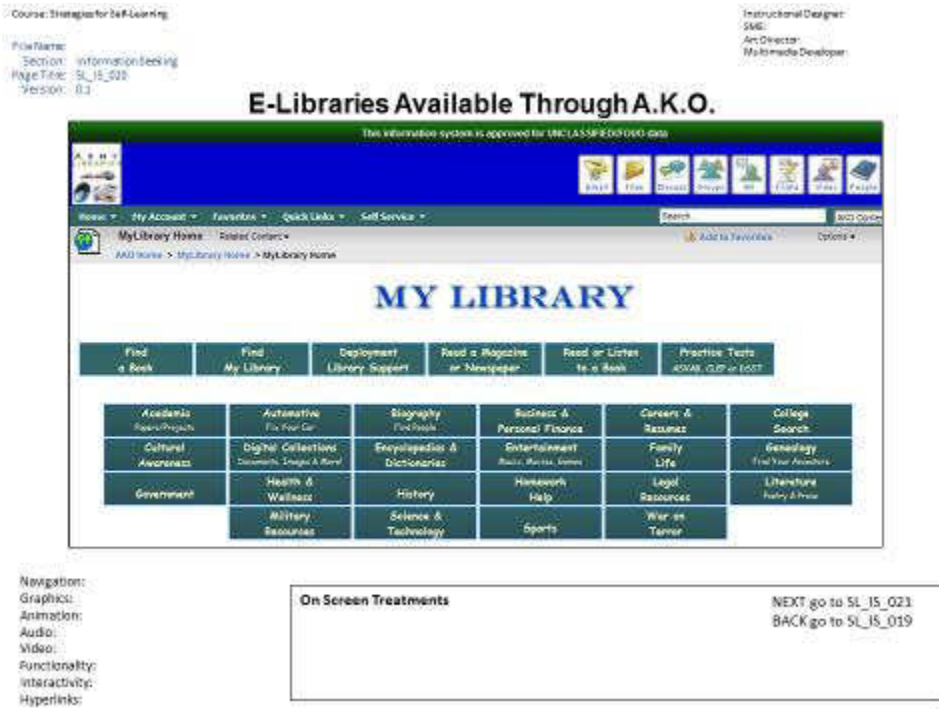


Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_15_020
 BACK go to SL_15_018

Narration: Most installations have at least one well resourced library that operates to support the needs of Soldiers, the local community, units, and retiree populations. These libraries are networked world wide. Additionally, military schools have libraries with support services distinctly tailored specifically to the needs of their students, leaders, faculty, and staff of the institution. The services provided are noted on the screen. Both types of libraries are geared to support learning resource needs. Additionally, entrance to Army Knowledge on Line can provide access to a vast warehouse of resources.



Narration: Army Knowledge on Line provides one of the best digital library resources in the world. Through A. K. O. you can tap into the resources of a worldwide network of over 90 libraries and hundreds of information databases. You can find everything from story hours, to book discussion groups, the latest novels, "how-to" books, encyclopedias, and the latest doctrinal references. Resources are available 24 hours a day, seven days a week. Assistance is also available to find quick answers or point you to the best sources for more in-depth research.

Course: Strategies for Self-Learning
Instructional Designer: SMG, Art Director, Multimedia Developer

File Name: Section: Information Seeking
Page Title: SL_15_022
Version: 0.3


Commercial Sources for Books and Publications

Bookstores offer books, e-books, magazines, music, DVDs, and related products and services.

Bookstores are one of the largest providers of self improvement resources.

Smart phone and tablet applications also provide free or low cost learning resources.

All are sources for test preparation materials, certifications, and personal improvement information.



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_010
BACK go to SL_15_020

Narration: Commercial outlets, both the brick and mortar type as well as online outlets, can be excellent sources for the latest books and publications on a task or knowledge areas. Additionally, applications for smart phones and tablets are a growing source of free and low cost publications. Commercial outlets also provide services to recommend publications or assist in locating difficult to find publications. Reviews or recommendations by subject matter experts, instructors, and trainers should guide your selection of publications. Spend wisely, remember many items may be available through A. K. O. free of charge. You have examined sources for books and publications, now examine other sources.

Course: Strategies for Self-Learning
 Instructional Designer: SMC, Art Director, Multimedia Developer

File Name: Information Seeking
 Page Title: SL_15_022
 Version: 0.3

Courses and Courseware as Learning Resources

School Code / Course Number	Correspondence Course Title
113-387	Cable Systems Installer/Maintainer Course (MOS 25L-76)
113-387	Radio/Teletype Transmission System Operator/Maintainer Course (MOS 25D-11)
113-490	Signal Support System Operator Course (MOS 25U)
113-019	Airline Installation Center (MOS 25L-80-82)
174-375	AWA Train Advanced Quality and Maintenance
191-021	Binary Printer of Data/Character Retention Course
741-017	Physical Security Course
101-011	Advanced HCO Retention

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_15_023
 BACK go to SL_15_010

Narration: Your interests or learning needs may guide you to a wide variety of sources for existing courses and courseware. These structured courses have been specifically designed to address learning needs. They are packaged to provide or identify the necessary materials to support your learning. Colleges and schools provide published and on-line listings of both resident and distance learning courses. A.K.O. as well as TRADOC centers of excellence and schools web sites provide extensive listings of distance learning materials, correspondence courses, and downloadable classes or courseware. Many of these courses have flexible schedules, can be provided to you in packages to permit you do complete them in your spare time, or can be accessed at any time to assist in meeting learning needs.

Flowchart:
Section: Information Seeking
Page Title: SL_15_023
Version: 0.3

Some Training Resources Are Immediately Available



The image shows two side-by-side screenshots. The left screenshot is a web browser displaying the ATN MT2 website with a sidebar menu and a main content area. A yellow highlight box is drawn around a specific training resource link. The right screenshot is a 3D virtual environment titled 'Warrior Task #071-526-0557' showing a character in a military uniform walking through a simulated urban street.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open the frame with the MT2 image. At the 1st PAUSE insert a highlight box over the designated course. At the 2nd PAUSE insert the Warrior Task opening frame over or within the MT2 menu frame.

NEXT go to SL_15_024
BACK go to SL_15_022

23

Narration: For example, training for many military subjects is immediately available through A.K.O. on the M. T. 2. site. Interactive multimedia courseware, publications, and structured learning materials can be accessed from the Army Training Network directly through your personal computer. Some can be used immediately or downloaded for use at a later time. (PAUSE) This example shows interactive multimedia training for a Warrior Task accessible for use on any personal computer. (PAUSE) Many other courseware modules are available to increase your knowledge and skills or provide quick refresher training.

Flowchart:
Section: Information Seeking
Page Title: SL_15_024
Version: 0.3


Army e-Learning

The e-Learning Environment through AKO provides access to:

- Over 5,000 courses in Information Technology (IT), business, and leadership skills
- IT certification prep programs - Microsoft Certified Solution Expert (MCSE), Microsoft Certified Solutions Associate (MCSA), CISSP, C++, Cisco, Oracle, and many more
- On-line subject matter experts and mentors available 24/7
- Custom learning paths
- Knowledge Centers - Leadership, Project Management, and IT Security

Some of the Values of Army e-Learning

- Promotion points for enlisted (1 for every 5 hours)
- Retirement points for Reservist (1 for every 3 hours)
- No cost to Soldiers (AC/RC/NG) or DACs
- College credit (ACE) - 41 course modules
- Over 40 certification programs - MCSE, A+, CISSP, Cisco, Oracle and more with personal mentoring



Army e-Learning provides the flexibility to train and learn from any location, anytime at no charge to the individual or unit.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

Open the frame with images and text above the BLUE --- line. At the PAUSE display the text below the BLUE line.

NEXT go to SL_15_010
BACK go to SL_15_023

24

Narration: E-learning is a broadly inclusive term. It includes multiple forms of educational technology, multimedia learning, technology-enhanced learning, computer-based training, online education, and virtual training and education. As we have indicated, state-of-the-art e-Learning on many subjects is available at no cost to the individual or organization. It can be accessed and used by all active duty Soldiers, members of the National Guard or Reserves, and Department of the Army civilian employees. (PAUSE) In addition to military subjects, over 5,000 Information Technology, Business, and Interpersonal Skills courses can be accessed around the clock. Completion of some courses results in valuable job certifications, college credit, promotion points, and other benefits. As you plan your learning, keep in mind that as a Soldier you have the opportunity to tap into a wide variety of people, resource materials, and structured courses to support your self-learning.

File Name: informationseeking
Section: SL_15_026
Page Title: SL_15_026
Version: 0.1

Resources Are Available to Match (Almost) Any Learning Environment



- Classroom:**
- On-site (at the institution or satellite location)
 - Virtual
 - Remote



- Duty Location or Military Site:**
- Unit
 - Education Center
 - Library
 - MWR Fiber Cafe



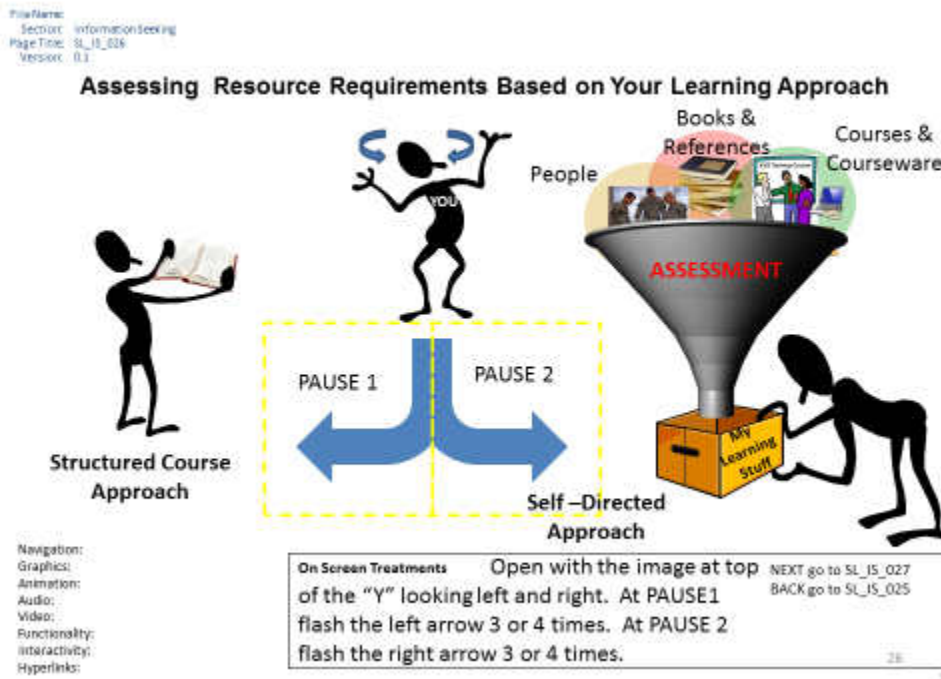
Home or Quarters

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_026
BACK go to SL_15_009




Narration: As discussed earlier, resources are available to match almost every possible learning environment. A wide variety of people, publications, and courses are available. As you perform your initial analysis and planning you will need to consider the learning and study location available to you, and delivery methods. You can then select or match up learning resources with the planned learning, your study environment, and your learning preferences.



Narration: For example, if your self-learning includes a structured course, (PAUSE 1) the required learning resources may be provided to or identified for you. Additionally, choosing supplemental resources may be guided by the instructor or derived from course materials. For military subjects, the Army has invested heavily in creating courses that guide Soldiers toward success. However, (PAUSE 2) if your learning approach is more self-directed or independent, narrowing down and selecting learning resources may prove a bit more challenging. Let us examine some techniques that may help you assess available resources and determine those that may best suit your learning needs.

File Name: Information Seeking
Section: SL_15_027
Page Title: SL_15_027
Version: 0.1

Consult with Those Who Have Experience or Expertise

Consult with:
Supervisors/Superiors
Peers (with similar interests)
SMEs (domain experts)
Civilian Teachers/Professors/Military Trainers
Guidance Counselors (Army Education Center or learning institution)
Librarians

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_028
BACK go to SL_15_026

27

Narration: Your first effort at assessing resources should be to solicit advice from some people you use as learning resources. Those who have an interest in your success, have related experiences, have expertise in the subject or domain, or can provide objective advice are the best sources. Be sure you qualify those you consult; you need advice not opinions. Their advice should help trim down the list of possible sources, but it may also add a resource or two that you had not considered.

File Name: Information Seeking
Section: SL_15_028
Page Title: SL_15_028
Version: 0.1

Read What Experts Say




Read what experts say:
Books or articles by:
• SMEs
• Civilian Teachers/Professors/Military Trainers

Articles in:
• Professional Journals
• Trade Publications

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_029
BACK go to SL_15_027

28

Narration: Sometimes local expertise may not be available for the subject area or you may desire additional assistance. The next best sources will be books or articles written by recognized subject matter experts. Articles in professional journals and trade publications will have passed the scrutiny of their editorial board. While the writers may not be recognized subject matter experts, their opinions may assist to narrow your search or provide recommendations for alternate materials.

Filename: informationseeking
Section: SL_15_028
Page Title: SL_15_028
Version: 03

Use Search Engines

Google
YAHOO!
bing

You may not always get the results you are looking for on the first attempt. Modify your search terms. Use specific words, word combinations, and quotation marks to narrow the search.

Use more than one search engine:
www.ask.com/
search.aol.com/
www.hotbot.com/

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_030
BACK go to SL_15_028

28

Narration: Using a search engine on the web or in Army Knowledge Online may also assist in narrowing your selection of learning resources. Multiple search techniques and the use of multiple search engines is recommended. There are several types of search engines and searches may cover titles of documents, URL's, headers, or full text. The results you get from one search engine may not match the results you get from another search engine; search engines behave differently. Additionally, not all websites found in the results are appropriate to your search.

File Name:
Sector: Information Seeking
Page Title: SL_15_008
Version: 0.1

Keep Track of Your Learning Resources

Learning Resource Tracking Log		
Title	Source/ URL / Location / date	Summary or Abstract



"I don't need to know everything,
I just need to know where to find
it, when I need it."

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:


On Screen Treatments

NEXT go to SL_15_009
BACK go to SL_15_029

Narration: As you identify and use good resources, keep track of them. Your tracking method could be a simple database on your home computer or in a note book. While you may desire to obtain and keep frequently used documents, good examples, or difficult to obtain sources in your library, storage space can quickly become an issue. It may be easier to make a note of where to find and retrieve the resources and information. Additionally, a brief two or three sentence summary will help identify the source's value and remind you of specific content. The genius Einstein's quote reminds us that knowing where information can be found may be as important as being able to recall the information. A good tracking log will be beneficial to you as time goes by. Additionally, source information that you have verified may help your subordinates and others as they pursue self-learning opportunities.

File Name:
Section: Information Seeking
Page Title: SL_15_031
Version: 0.1

Finding and Making Learning Opportunities: Expanding Your Military Knowledge and Skills



Airmobile Operations Weapons Maintenance Mountaineering Demolitions

Vehicle Maintenance and Inspections Communications UAV Operations Air Load Operations

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_032
BACK go to SL_15_009

Narration: Learning frequently involves doing. You can expand your knowledge while watching demonstrations, reading, and completing multimedia courses. However, most skills require an introduction, gaining expertise and ability through hands-on training and practice, and finally performing the task on your own, (pause) the crawl, walk, run approach. You may be able to expand or master some new skills at schools and during unit training; other skills may require that you train with other units, volunteer yourself or your element for some training opportunities or duties, or train on your own time. Training with others may require permission from your chain of command and coordination with your unit S3 or operations staff. While this process involves some extra effort on your part, the results will pay dividends.

File Name: Information Seeking
Section: SL_15_032
Page Title: SL_15_032
Version: 0.1

Learning Opportunities: Other Avenues

Getting time on the training schedule for special training events and activities





Training from "outside" experts

Leadership Reaction Course

Museum visits or special demonstrations




NCO Professional Development

Sergeants' Time

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments



NEXT go to SL_15_033
BACK go to SL_15_031

32

Narration: Additionally, you can coordinate for use of unit training time and resources. Outside resources, training opportunities, or experts from outside your unit may provide increased learning opportunities. These resources may include broadened opportunities for non-commissioned officer professional development and innovative use of Sergeants Time, creating learning opportunities for both you and your unit.

File Name: Information Seeking
Section: SL_15_033
Page Title: SL_15_033
Version: 0.1

Learning Opportunities: Military Schools

Your supporting S3/Operations Section can assist with requests for military schools. The S3 normally manages course quotas and allocations provided to your unit.

Some Schools at your installation may take walk-in students when space is available.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_034
BACK go to SL_15_032

33

Narration: You can request military schools or training through your unit chain of command and supporting operations staff. Some units may have standing or order of merit lists

for students waiting to attend courses. It is prudent to be aware of course qualifications, prerequisites, and required documentation. Prequalifying and having required documents and certifications completed will avoid last minute problems. Additionally, some installation schools may have provisions for waiting lists or walk-in students when course quotas are not filled. Consult your chain of command for details and requirements.

File Name: InformationSeeking
Section: SL_15_034
Page Title: SL_15_034
Version: 0.1

Non-Military Self-Learning and Development Opportunities

The collage features several educational and professional resources. On the left is a screenshot of a 'HISTORY LISTS' website. In the center is a blue 'Academic Catalog' book. On the right is a newspaper with a 'HAWKEYE HATCHETS' headline. Below these are a 'Police Chief' magazine, a 'training' magazine, and a rolled-up newspaper.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_15_009
BACK go to SL_15_033

34

Narration: There are numerous self-learning opportunities available in most communities, your time and resources permitting. A keen eye on the television schedule may provide some. Colleges, state agencies, trade schools, and professional associations often host adult education opportunities, seminars, and short courses geared toward those with limited time in their schedules. However, there may be a fee for some. School and college web sites, local or installation newspapers, and professional journals may provide details. Some professional and trade associations host special learning opportunities for their members. Soldiers can often participate for a reduced fee. Opportunities are plentiful (PAUSE) duties, schedule, and wallet permitting.

FileName:
Sector: Information Seeking
Page Title: SL_15_035
Version: 0.1

The "Resources" Tab on the "Navigation Bar"



Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments	NEXT go to SL_15_036 BACK go to SL_15_009
	35

Narration: Many new to this process may not be familiar with some of the sources available to support their self-learning. At the Resources tab on the Navigation Bar there is an extensive table of contents with links to sources. Additionally, some learning resource documents have been embedded in this material. You may view, download, and save these materials. Please understand that we have only listed or made available a small selection of links and sources to help you get started.

FileName:
Sector: Information Seeking
Page Title: SL_15_036
Version: 0.1

Information Seeking Strategies Summary

1. Identify likely sources of good information (e.g., libraries, Google, AKO, CALL).
2. Collect examples of completed work (e.g., briefings, NCOERs, OPORDs) to use as models and examples.
3. Think about experiences you have had (or examples you know about) to help make sense of what you are learning.
4. Seek opportunities to learn things hands-on; get someone to demonstrate or show you.
5. Support learning with computer programs, CDs, videos (e.g., language learning software).
6. Keep a list, spreadsheet, notebook, etc., to track the resources that you have collected and read.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments	NEXT go to S_SL_1_0?? BACK go to SL_SL_009
NEXT goes to the Intro Module Selection Menu SL_1_??	36

Narration: Here is a summary of the learning strategies associated with information seeking. Review this list and select NEXT to continue or BACK to return to the instructional menu for this module.


APPENDIX K: STORY BOARDS - A LEG UP ON SELF-
LEARNING: STRATEGIES FOR SUCCESS: MODULE 5: SENSE MAKING STRATEGIES

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_002
Version: 0.1

Executing the Plan: Making the Most Out of Learning Opportunities



Navigation: Advance to SL_SM_002 when the narration is complete.

Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

<p>On Screen Treatments</p> <p>Still of mentor addressing the student. Use mentor identified in the Introduction module.</p>	<p>Go to SL_SM_002 when the narration ends. BACK go to Intro Module Selection Menu SL_1_??</p>
--	--

MENTOR: Sense making is an important aspect of self-learning. Have you ever trained a formation of new Privates on drills and ceremonies? You tell'em what to do, demonstrate the movements, and ask'em if they got it. Usually, they all respond with a loud and thunderous, "Yes, Sergeant," but when the command, "Column Right, march," is given they step off like you tied their bootlaces together. They really didn't get it. Your sense making techniques should be better than those of new Privates. But, how do you make sense of what you are learning? How do you make the most out of each learning opportunity and make newly acquired knowledge and skills useful? Let's look in on Sergeants Hope and Jones. Both NCOs are in their rooms at their ALC residence course studying troop leading procedures. In tomorrow's class they will be issued a tactical order, be required to produce an order, and explain how they implemented TLP to prepare for the mission.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer: SME, Art Director, Multimedia Developer

File Name: Section: Sense Making in Self-Learning Page Title: SL_SM_002 Version: 0.2

Self-Learning and Sense Making

SGT Hope

Steps to Go See or Go Do

- Initiate Movement
- Conduct Recon
- Supervise & Refine
 - + PC
 - + Rehearse
 - + Re-inspect

Complete the Action

- Complete the Plan
- Issue the Order

SGT Jones

troop Leading Procedures

1. Receive the Plan
2. Issue the Order
3. Supervise & Refine
4. Rehearse
5. Re-inspect

On Screen Treatments

NEXT go to SL_SM_003
BACK go to SL_SM_001

Navigation: Graphics: Animation: Audio: Video: Functionality: Interactivity: Hyperlinks:

MENTOR: Sergeant Hope is examining the relationships of the steps of troop leading procedures. He is thinking about steps or sub elements of steps that may be omitted, abbreviated, compressed, or modified. He has thought through a couple of tactical scenarios he has experienced and has applied his new understanding of troop leading procedures. (Pause) In his room, Sergeant Jones is reviewing the steps of TLP. He is memorizing their order. Okay now, which one of these young Sergeants is using his study time more effectively? Which Sergeant is using the better technique to enhance his understanding of TLP?

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer: SME, Art Director, Multimedia Developer

File Name: Section: Sense Making in Self-Learning Page Title: SL_SM_003 Version: 0.2

Learning and Sense Making

On Screen Treatments

Still of mentor addressing the student. Use mentor identified in the **Introduction** module.

NEXT go to SL_SM_004
BACK go to SL_SM_002

Navigation: Graphics: Animation: Audio: Video: Functionality: Interactivity: Hyperlinks:

MENTOR: Now think about the answers to the questions. To determine the answers you most likely employed a form of analysis and sense making, perhaps briefly examining variations, comparing these two contrasting cases, and briefly examining the learning approaches used by Sergeant Hope and Sergeant Jones. When you apply yourself to learning a new skill, especially one that you don't know very much about, what do you normally do to enhance your learning? Put yourself in the scenario with Sergeants Hope and Jones. Think about it then select NEXT to begin your brief self-assessment.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name: Sense Making in Self-Learning
 Section: SL_SM_004
 Page Title: SL_SM_004
 Version: 0.2

Instructional Designer: SME:
 Art Director: Multimedia Developer:

NCO Self-Learning Strategies Scenario Scale: Sense Making

The table below provides a list of various learning strategies that NCOs have reported using to learn on their own. For each learning strategy listed, please rate how relevant it would be in your approach to learning in this or a similar scenario. Select the submit button when your selections are complete.

	Not Relevant	Somewhat Relevant	Relevant	Very Relevant	Essential	
Summarizing what I am learning in my own words	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	SUBMIT
Spend extra time focusing on information that seems new, unusual, or confusing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Diagramming/white-boarding concepts and processes to understand them better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Seeking out different alternatives and points-of-view to help challenge/verify what I am learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Using mental imagery to play out "what if" scenarios and/or to rehearse procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity: Sense/compare their value on 005.
 Hyperlinks:

On Screen Treatments
 Selection of submit will cause computation of the average score for these factors and display that value on SL_SM_005.
 Values are: NR=1, SR=2, R=3, VR=4, E=5.
 Require selection of a value for each (row) Learning Strategy, compute value and advance when SUBMIT is selected.

NEXT on SUBMIT go to SL_SM_005
 BACK go to SL_SM_002

Narration: Consider the scenario you observed and rate the relevance of each of the Learning Strategies listed. There is no right or wrong selection. Your honest response will provide you with the most accurate self-assessment. After you have determined the relevance of each strategy, click on the submit button to compare your self-assessment to peers and others.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name: Sense Making in Self-Learning
 Sector: SL_SM_005
 Page Title: SL_SM_005
 Version: 0.2

Instructional Designer: SMC
 Art Director: Multimedia Developer
 Display data as a vertical bar graph with a red arrow positioned for the students score.

Your Score for Making Sense

DATE: _____

Rank			
	SGT	S5G to SFC	MSG/1SG >
1	2	1	2
2	7	6	12
3	29	29	31
4	39	44	40
5	24	20	16

Your Score

Career Management Field			
	Combat Arms	Combat Support	Combat Service Support
1	1	1	1
2	7	6	8
3	31	30	26
4	43	38	43
5	18	26	22

Civilian Education			
	GED/H.S.	Some College	College Degree
1	2	1	1
2	7	6	9
3	30	29	29
4	38	43	40
5	24	21	20

Time in Service (years)			
	0 to 5	5 to 10	10 +
1	2	2	2
2	6	7	7
3	27	30	29
4	34	40	44
5	32	22	18

On Screen Treatments

Display the computed number from SL_SM_004 and date. NEXT go to SL_SM_006

SAVE: permits the student to save this page (MS Office product or PDF) to the desktop or a designated file on the computer being used. BACK go to SL_SM_004

PRINT: permits the student to print this page if the computer is connected to a printer.


Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality: Only play computed values in Your Score
 Interactivity:
 Hyperlinks:

Narration: Now compare your score for the relevance of Sense Making strategies in self-learning to others. If your score is equal to or below those of your peers or more senior NCOs, you have some work to do. You may see the impact reflected in poor execution of your learning plans. It may also reflect in the poor application or use of new knowledge or skills that you thought you had learned or understanding gained. Scoring higher than your peers may indicate that your sense making skills and strategies are a strength, one that you should build on. After reviewing the comparisons, select next to examine ways to improve your self-learning strategies. You may print or save this data for future reference.

Course: Getting a Leg Up on Self-Learning: Strategies for Success
 Instructional Designer: SME, Art Director, Multimedia Developer



File Name: Sense Making in Self-Learning
 Section: SL_SM_006
 Page Title: SL_SM_006
 Version: 0.2

Preparation for Sense Making and Plan Execution



Executing a learning plan and sense making require that you organize self-learning strategies into three (3) categories:

- Pre-learning
- During learning
- Review and evaluation

The Operations Process

On Screen Treatments
 Initially display the Operations Process graphic with **Battle Command** inside. On the "change graphic" cue, remove the **Battle Command** circle and arrows and insert the helmeted head with **YOU**.

NEXT go to SL_SM_007
 BACK go to SL_SM_005


Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

MENTOR: Executing a self-learning plan requires that you organize and apply appropriate strategies. Much of what occurs in successful self-learning, parallels the tried and true operations process . . . (Pause – change graphic) except instead of a commander and battle command being at the center of the process, it is you. While some tracking of the plan occurs, much of your self-assessment is focused on sense making, assessing your learning. Do you understand what you are learning and are you able to apply the knowledge and skills being gained? Take a closer look at sense making strategies.

Course: Getting a Leg Up on Self-Learning: Strategies for Success
 Instructional Designer: SME, Art Director, Multimedia Developer

File Name: Sense Making in Self-Learning
 Section: SL_SM_007
 Page Title: SL_SM_007
 Version: 0.2

Pre-Learning Strategies



Strategy Domain	Example Strategies
Diagnosing learning needs	Clearly define what you need to learn when beginning the learning process.
	Identify what you desire to be able to do as a result of what you are learning.
Planning and goal-setting	Break down your overall learning task into smaller, manageable parts.
	Plan step-by-step what you need to do in working toward your goal.
	Plan how to pace your learning to minimize conflict with other obligations.
	Prioritize learning tasks and/or topics that need to be covered
	Develop a time-line, roadmap, or list of milestones and use them to track your progress.

On Screen Treatments
 NEXT go to SL_SM_008
 BACK go to SL_SM_006

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

Narration: As a review, let us examine pre-learning strategies, many of these are discussed in detail in the Planning and Analysis Module. These strategies are focused on determining what to learn, establishing priorities, and setting a timeline and milestones focused toward your final goals. These strategies help formulate a meaningful self-learning plan and assist in learning preparation.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer: SMC
Art Director: Multimedia Developer

File Name: Sense Making in Self-Learning
Section: SL_SM_008
Page Title: SL_SM_008
Version: 0.2

Learning Execution Strategies

Strategy Domain	Example
Establishing consequences	Set a deadline to complete my learning task and/or produce a product (e.g., a briefing)
Seeking and reviewing information	Identify my most likely sources of good information (e.g., libraries, Google, CALL)
	Collect examples of completed work (e.g., briefings, NCOERs) to use as a model Seek out different alternatives/points-of-view to challenge or verify what you are learning. Diagram/white-board concepts and processes to understand them better
Seeking social support	Ask trained Cadre/SMEs for advice and feedback on my performance
Modeling and rehearsing	Seek opportunities to learn things hands-on; get someone to show you.
	Use mental imagery to play out 'what if' scenarios and/or to rehearse procedures Seek opportunities to teach/explain to others what you have learned
Record keeping	Keep a list, spreadsheet, etc., to track the resources you have collected, read, or used.
	Summarize what you are learning in your own words

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009
BACK go to SL_SM_007

Narration: Listed are the strategies frequently employed in successful execution of self-learning. While some are focused on assembling and managing learning resources or tracking progress, those highlighted in yellow are focused on sense making. These strategies help you to assess your ability or proficiency in the application or use of knowledge or skills that you focused on learning. They also increase your understanding of the knowledge and skills gained.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name: Sense Making in Self-Learning
 Section: SL_SM_009
 Page Title: SL_SM_009
 Version: 0.2

Instructional Designer: SME:
 Art Director: Multimedia Developer:

Examining Sense Making Strategies

Numbers in **Blue** are provided for reference **ONLY** do NOT display!

- 1 Seek out different alternatives/points-of-view to challenge or verify what you are learning.
- 2 Diagram/white-board concepts and processes to understand them better.
- 3 Use mental imagery to play out 'what if' scenarios and/or to rehearse procedures.
- 4 Seek opportunities to teach/explain to others what you have learned.
- 5 Summarize what you are learning in your own words.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments
 BLUE numbers are for reference only! Do not display. NEXT go to SL_SM_020.
 If 1 is selected go to SL_SM_010. If 2 is selected go to SL_SM_012. BACK go to SL_SM_008.
 If 3 is selected go to SL_SM_014. If 4 is selected go to SL_SM_017.
 If 5 is selected go to SL_PA_019. Provide a visited state; place a ✓ on the blocks selected. Do not enable NEXT till all buttons are selected.


Narration: Select a button to learn more about these sense making strategies. After you have examined each of the strategies select Next to continue.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name: Sense Making in Self-Learning
 Section: SL_SM_011
 Page Title: SL_SM_011
 Version: 0.2

Instructional Designer: SME:
 Art Director: Multimedia Developer:

Challenge or Verify Learning



Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments
 NEXT go to SL_SM_011.
 BACK go to SL_SM_009

Narration: Army leaders have a unique obligation when learning. Soldiers' lives and safety, critical system operation and maintenance, and the performance of units rely heavily on the knowledge and skills of leaders. Leaders must assure that the knowledge and skills being acquired through self-learning are proper, valid, current, and safe.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_009
Version: 0.2

Alternatives to Verify Learning



Sources to Challenge and Verify Self-Learning

- Multiple or alternate source documents
- Subject matter experts
- Superiors and supervisors
- Self testing or examination by others

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009.
BACK go to SL_SM_010

Narration: Several avenues and sources are available to assist you in challenging or verifying your learning. Multiple documents or different authors can broaden your understanding. They may explain concepts in varied ways. Subject matter experts, knowledgeable peers, or members of your chain of command can query you, check your work, or explain procedures or concepts. Practical testing provides another tool. Frequent checks can keep you on track and assist in avoiding mistakes, misconceptions, or errors.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_012
Version: 0.2

Diagram Concepts and Processes for Better Understanding



Some Examples of Diagramming Tools Used for Sense Making and Knowledge Construction

- Concept map – a top down diagram showing the relationships between ideas. It should include cross connections (associations and dependencies), as well as cause and effect or expected results.
- Conceptual diagram – a depiction or copy of an idea or theory. Ideas will normally be grouped in like categories and relationships between groups are indicated.
- Procedural diagram – a flow chart or model that illustrates the flow and sequence of activities in producing a product, providing a service, or troubleshooting and repairing a system or subsystem.
- Organizational diagram – a diagram that shows the structure of an organization or field of knowledge and the relationships and relative ranks of its elements, parts, or positions.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

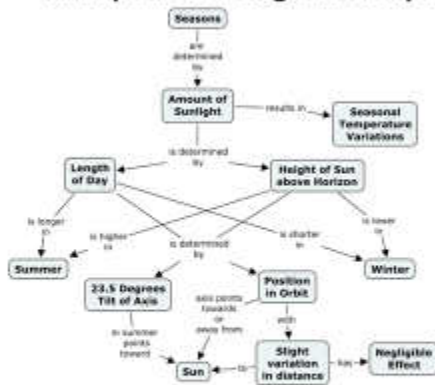
NEXT go to SL_SM_013
BACK go to SL_SM_009

Narration: Taking notes in class supports recall and learning. Similarly diagramming concepts and processes improves understanding, identifies relationships, and improves knowledge retention. There are several methods or tools, and diagramming can be performed using a white board, a blackboard, or large note pad. A familiar example of a useful diagram is an operations overlays. An operations overlay provides a visual diagram of unit missions and the concept of maneuver. Expressing the ideas of an order in words alone frequently provides insufficient details for understanding or execution.

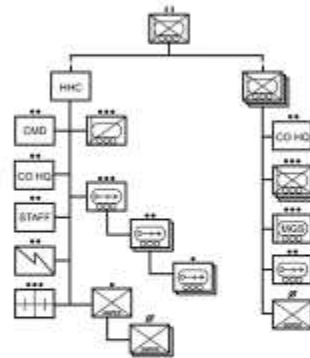
Course: Getting a Leg Up on Self-Learning: Strategies for Success
 File Name: Sense Making in Self-Learning
 Section: SL_SM_009
 Page Title: SL_SM_009
 Version: 0.2

Instructional Designer:
 SME:
 Art Director:
 Multimedia Developer:

Examples of a Diagrams Helpful to Understanding and Learning



This concept map shows the relationship between the seasons of the year and the position of the sun.



This organizational diagram shows the structure of a Stryker Infantry Battalion with Headquarters and Headquarters Company and three Rifle Companies and their subordinate elements.

Navigation:
 Graphics:
 Animation:
 Audio:
 Video:
 Functionality:
 Interactivity:
 Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009
 BACK go to SL_SM_012

Narration: Diagrams and maps structure information and ideas visually, usually arranging them in chunks or grouping them in graphic boxes. These chunks, connecting lines, and sequences provide associations and help define relationships, progression or order, as well as structures and subordination. These grouped pieces and relationships simplify complex ideas and processes making them easier to understand and associate.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer: SME, Art Director, Multimedia Developer

File Name: Section: Sense Making in Self-Learning Page Title: SL_SM_014 Version: 0.2

Crawl, Walk, Run Example: Marksmanship

Navigation: Graphics: Animation: Audio: Video: Functionality: Interactivity: Hyperlinks:

On Screen Treatments NEXT go to SL_SM_015 BACK go to SL_SM_009

NARRATION: Slow is smooth and smooth is fast. When learning skills or gaining knowledge, it is tempting to hurry, get it done as fast as possible. This is a mistake. It risks learning a skill incorrectly, misunderstanding, or misapplying new knowledge. The Army has a philosophy that applies to all learning, it is the concept of crawl, walk, run. This learning concept can be applied to most every learning situation. Additionally, you should be grounded in the fundamentals before attempting advanced skills or concepts.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

Instructional Designer: SME, Art Director, Multimedia Developer

File Name: Section: Sense Making in Self-Learning Page Title: SL_SM_015 Version: 0.2

"What If" Scenarios and Procedural Rehearsals

A student uses a real world scenario to think through an offensive operation and develop an operations plan.

A student uses a procedural diagram to think through a business problem for a college class.

A team works through their actions in a simulated natural disaster scenario.

Navigation: Graphics: Animation: Audio: Video: Functionality: Interactivity: Hyperlinks:

On Screen Treatments NEXT go to SL_SM_016 BACK go to SL_SM_014

Narration: Before assuming that you have it right or employing your new knowledge and skills on the job or in a live environment, you should practice or rehearse. This practice may take place using a desk top or white board problem , a “what if” scenario, or actual equipment. For example, the practice may be a procedural rehearsal using one of the diagrams you created in an associated sense making topic. You should think through the conditions that may be factors such as time, distance, and resources available. The complexity of your rehearsals can be varied. For some procedures and skills the process may be as simple as using mental imagery, just thinking it through.

Course: Getting a Leg Up on Self-Learning: Strategies for Success
File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_01E
Version: 0.2

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

Demonstrate or Explain It to . . .



Demonstrating a skill to an instructor or SME.



Talking it through with a knowledgeable peer, superior, or a mentor.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009
BACK go to SL_SM_015

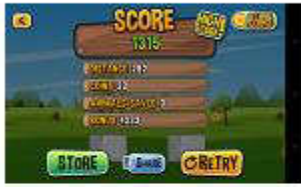
Narration: The last step in using this strategy should be to check or validate your practice or rehearsal. This may be as simple as a self-check or self-examination of the process, steps, and the end result. However, you may want to show it to or talk it through with a knowledgeable peer, a subject matter expert, or a mentor. An over the shoulder check, attentive ear, or second pair of eyes may be most important in the early stages of self-learning. This check will help assure that you achieve the fundamentals and build your subsequent knowledge and skills on a good foundation.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_007
Version: 0.2

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Promoting Your Self-Learning by Teaching Others or Demonstrations



Video game – HIGH SCORE



Training a new skill to a subordinate



Demonstrating competence in a new skill to peers or superiors

When you transfer new knowledge and skills into everyday life and duties, learning is promoted. This transfer can be accomplished by demonstrating your new knowledge and skills or by teaching your knowledge and skills to others.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_018
BACK go to SL_SM_009

Narration: One of the big draws in video gaming is gratification, advancing to a new level or attaining a high score encourages additional participation. It is human nature to seek recognition. To some extent, the same is true of self-learning. Instructional theories advocate that learning is promoted when the learner integrates or transfers new knowledge and skills into everyday life. One of the ways this can be done is by demonstrating your new skills or teaching them to subordinates, associates, or superiors. This is a proven method of reinforcing learning, improving retention, and increasing self motivation.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_018
Version: 0.2

Instructional Designer:
SMB:
Art Director:
Multimedia Developer:

Transfer by Discussing, Defending, or Problem Solving



Your learning is promoted when you share, discuss, or defend your new concepts and knowledge. Applying your new knowledge and skills to solve problems is another method of demonstration that also promotes learning.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009
BACK go to SL_SM_017

Narration: Discussing and defending your new knowledge with others, or applying your new knowledge to solve real world problems, improve conditions, or solve issues also promotes learning. Taking opportunities to synthesize and reflect on your knowledge and apply it in collaborative problem solving also promotes your learning. Practical application of your new knowledge and skills demonstrates to others, as well as yourself, the value of the skills and concepts that you have learned.

Course: Getting a Leg Up on Self-Learning: Strategies for Success

File Name:
Section: Sense Making in Self-Learning
Page Title: SL_SM_009
Version: 02

Instructional Designer:
SME:
Art Director:
Multimedia Developer:

Putting It In Your Own Words: Increasing Your Understanding



Restating the mission provided by your higher headquarters to focus your unit's future mission and planning.



Summarizing what you have learned in your own words, personalizing the new knowledge and skills.

Navigation:
Graphics:
Animation:
Audio:
Video:
Functionality:
Interactivity:
Hyperlinks:

On Screen Treatments

NEXT go to SL_SM_009
BACK go to SL_SM_009

Narration: An important aspect of mission analysis after receiving an operations order or plan from your higher headquarters is to determine the restated mission. The restated mission becomes the mission for your unit and the focus for further planning. That process is paralleled in self-learning. You should summarize in your own words the new knowledge and skills gained and summarize your learning. This simple process helps you personalize the knowledge and check it against your goals and objectives. The process also helps you determine other ways that you may employ the new knowledge and skills. It also assists in checking for any related deficiencies or problems that you may need to correct or clarify.

APPENDIX L:

VITA

Tammy A. Bankus
Darden College of Education
218 Education Building
Norfolk, VA 23529

EDUCATION

Old Dominion University, PhD candidate
Curriculum & Instruction.

Dissertation: *Self-Regulation and Cognitive Load as Mediating Factors for Tailored Army NCO Interactive Multimedia Instruction.*

University of Georgia, Education Specialist (Ed.S)

Educational Psychology & Instructional Technology (2006)

The Influence of Social Interaction on Gender Differences in Mathematics Strategies; Research Assistantship, Graduate TA.

University of Georgia, M.Ed.

Adult Education (2009)

Thesis: *Application of Adult Education Principles into Distance Learning.*

Georgia College and State University, M.S.

Psychology (2000)

Thesis: *An Evaluation of the Dementia Rating Scale for Assessing Cognitive Abilities in Mentally Retarded Individuals.*

WORK EXPERIENCE

Department of the Army (9 Years)

Ft. Eustis, VA, GS 12 – 13, 11/2010 – Present, Senior Instructional Systems Specialist, HQ TRADOC, INCOPD, Learning Initiatives Integration Division.

PRESENTATIONS/PUBLICATIONS

Cognitive Load and Army DL Design Considerations (submitted for publication Army dL Star FEB 2016);

Tutorial systems for dL (submitted for publication Army dL Star JUN 2016);

NCO 2020 Survey Analysis Whitepaper; Military review *NCO 2020: A concept for self-paced learning in NCOES*;

Army DL Times: *Multiple-Choice Tests Can Measure More than Knowledge*;

Army DL Conference: *Applying Evidence-Based Practices for Army Technology Integration into the Training Environment*;

Army DL Conference: *Evidence Based Practices in Educational Technology for Army Training*;

International Conference for Educational Research: *Evidence Based Practices for Technology Integration into Training*