<u>A CURRICULUM STRUCTURED DESIGN FOR EDUCATING ADULTS IN
DETECTING DECEPTION AND ELICITING INFORMATION</u>

by

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A Dissertation
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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Arts at George Mason University

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DEDICATION

This is dedicated to my loving grandparents Harry and Blanche Castle who are no longer with us but in spirit fill my days with strength and commitment that I share with the world. I also dedicate this to my loving mother Frances, my wife Kim and my son Sean, daughter-in-law Vanessa, my three wonderful grandchildren Kean, Keera, Kevon, and stepson Bryan.

ACKNOWLEDGEMENTS

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ABSTRACT

CURRICULUM STRUCTURED DESIGN FOR EDUCATING ADULTS IN DETECTING DECEPTION AND ELICITING INFORMATION

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This dissertation describes the overall effectiveness of deception detection training and identifies conditions that may enhance training effectiveness through understanding how adults learn and utilizing scenario-based training. The analysis was based on a total of 1,788 evaluation data sheets (archival records). The major aim of the research is to share information on scenario-based training in deception detection and information elicitation and its utility in training adult learners. In the process of researching and writing this dissertation, the author conducted a literature search and review on deception detection, adult learning, and scenario-based learning. This dissertation is slated to be a reference and resource for military, security, and law enforcement settings.

CHAPTER 1: INTRODUCTION

Following the events of September 11, 2001, it is now more important than ever for public safety officers to identify and neutralize individuals who pose a threat to public safety. Today, investigators are aided in deception detection by technical devices like the polygraph, voice stress analysis, facial thermal imaging, and magnetic resonance imaging (MRI). When used to complement a trained investigator's elicitation skills, these devices can serve to effectively focus the investigator's elicitation efforts in areas of specific concern to the suspect, thus improving the investigator's opportunity to elicit information pertinent to the issue in question. Indeed, determining the truth of a matter in question could mean the difference between life and death. In prescribing improvements to many practitioners inside the U.S. government that face the problem of identifying potential terrorists, it became critical to understand how best to train adults who have that responsibility. As is the case with so many factors related to detecting deception, elicitation, interviewing and interrogation, and adult learning, there are a great number of prescribed choices for effective training.

Historical Efforts at Detecting Deception

Deception detection has a long and, at times, sordid history. Kerr, Forsyth, and Plyley (1992) found that in 500 BC Indian priests would put a donkey in a dark room and put lampblack on its tail. A group of suspected criminals was then brought into the dark

room, and told that when the guilty party pulled the donkey's tail, he would speak and be heard throughout the temple. The person who pulled the tail and had clean hands was then pronounced the thief and punished (Kerr et al., 1992).

In medieval England, trial by ordeal determined guilt or innocence. A suspected liar could be ordered to carry a red-hot iron bar, or walk across red-hot ploughshares. If the suspect was burned, that was proof he was lying and he would be executed. Other courts employed trial by water, with the accused being put into a sack and thrown into a pond. If the accused sank, he was deemed to be innocent. If he floated, it was taken as proof he was lying and he would be hung (Kerr et al., 1992). During the 19th century, phrenology—the "measurement of bumps on a person's skull"—led investigators to believe they could determine truth or deception by looking at and measuring a person's physical symptoms (Schlag, 1997).

As time passed, the scientific community began looking at the chemical makeup of the suspected criminal's brain in search of a truth serum. Scopolamine, sodium amytal, and sodium pentothal were occasionally given to suspects in the hopes of rendering them incapable of lying. While these drugs caused the suspect to lose control of their thought and speech processes, "normally an endless stream of drug-addled gibberish" resulted, often leaving the investigators even more confused than before (Schlag, 1997).

An early, less successful lie detector machine or polygraph was invented by James Mackenzie in 1902. However, the modern polygraph machine was invented by John Larson, a University of California medical student, in 1921. Used in police interrogation and investigation since 1924, the lie detector is still controversial among

psychologists, and is not always judicially acceptable. The name polygraph comes from the fact that the machine records several different body responses simultaneously as the individuals are questioned.

As a former CIA polygraph expert, here is how polygraphs work as I understand it. The polygraph is an instrument that records physiological activity; if it is properly calibrated, it will accurately record the data that it is designed to collect: pulse, perspiration, and breathing rates. The question: How valid is the test in detecting deception? One strong ingredient of polygraph testing is the "control question" test, which measures the difference between a control question ("Have you ever lied to a person in a position of authority?") and a deception-relevant question ("Have you ever smoked marijuana?"). If the relevant question elicits more of a response, then the subject is believed to have "attempted deception." There is also a less-reliable "relevant/irrelevant" test ("RI test"). Subjects are asked a string of questions on stressful subjects with only brief respites of "irrelevant" questions. Some polygraph examiners have placed more credence in the "directed lie" test. This test requires a subject to state an obvious lie—"I have sex with my brother every day"—on the premise that any lie produces indications of stress, which gives the examiner a better "base" from which to measure a subject's later, deliberate attempt at deception.

Thus the fatal flaw for deception detection is that the polygraph is best utilized in specific-issue or single-issue testing, versus the random screening approach. To specifically tackle the modern problem of identifying potential terrorist threats, training in observation and information elicitation are needed.

Background of the Problem

The September 11, 2001, event set the stage to discover the best course of action to identify potential terrorists and the necessary training required to assist in stopping those seeking to enter the United States to engage in potentially hostile activities. On September 11, 19 al-Qaeda terrorists attacked America. The plot began when 26 al-Qaeda terrorist conspirators—18 Saudis, 2 Emiratis, 1 Egyptian, 1 Lebanese, 1 Moroccan, 1 Pakistani, and 2 Yemenis—sought to enter the U.S. for the specific purpose of carrying out a suicide mission. The *9-11 Commission Report* (National Commission on Terrorist Attacks Upon the United States [National Commission], 2004) notes that the first members of the suicide team began to acquire the means to enter the United States two years and five months before the 9/11 attacks.

Per the National Commission, three of these conspirators were "known or knowable" by intelligence authorities as al-Qaeda terrorists in early 2000 (2004), but their biographic information was not fully developed or provided to border authorities for watch listing at U.S. embassies abroad (by the State Department) or at the borders (by Immigration and Customs border inspectors).

Three of the conspirators were carrying Saudi passports containing a possible extremist indicator present in the passports of many al-Qaeda and other terrorists entering the U.S. as early as the first World Trade Center bombing in 1993. This indicator had not been analyzed by the CIA, FBI, or border authorities for its significance. Two of the conspirators were carrying passports that had been manipulated in a fraudulent manner,

containing fraudulent entry–exit stamps (or cachets) probably inserted by al-Qaeda travel document forgers.

The *9-11 Commission Report* (National Commission, 2004) noted that conspirators began attempts to acquire U.S. visas in April 1999. Two of the conspirators lied on their visa applications in detectable ways but were never questioned about these lies. Two conspirators were interviewed for reasons unrelated to terrorism. Most simply had their applications approved and their passports stamped with a U.S. visa. Consular officers were not trained to detect terrorists in a visa interview.

Once the operation was under way, the conspirators attempted to enter the U.S. 34 times over 21 months through 9 airports. They succeeded all but once. Border inspectors at U.S. airports were unaware of the potential significance of indicators of possible terrorist affiliation in the conspirators' passports and had no information about fraudulent travel stamps associated with al-Qaeda. No inspectors or agents were trained in terrorist travel intelligence gathering or fraudulent document practices. Few of the inspectors or agents had interviewing skills that were cultivated in any fashion beyond that received during on-the-job training. More importantly, the culture these inspectors worked in was one of travel facilitation and lax enforcement (with the exception of programs to interdict drug couriers and known criminals).

Immediately after the 9/11 attacks, immigration and customs leadership jointly put in place their agency's most stringent security precautions and in the process nearly shut down the borders and caused a traffic backup at the land borders and a commercial crisis. The terrorist attack of 9/11, in short, highlighted the need for effective training

programs in deception detection and elicitation of information, and simultaneously raised the ante on the consequences of failing to attend to this vital training.

It should be noted that security problems continue to evolve in the present climate, as reflected by mercurial U.S. reactions to global instabilities. Concomitant to domestic safety measures, there also exist national security threats. As Wyler of the Congressional Research Service points out, "U.S. national security documents generally address weak states in relation to four key threat areas: (1) terrorism, (2) international crime, (3) nuclear proliferation, and (4) regional instability" (2007, p.5). In other words, terrorists can benefit from the insufficient legislation of enforcement of enervated nations to finance and carry out their operations. Therefore, it becomes essential to enhance efforts and programs concerning national security.

The current circumstances could lead one to believe that U.S law enforcement officers are uniquely positioned, yet not always adequately trained, to critically understand the counterterrorism mission. As addressed above, there are many tools for detection deception and they are growing in sophistication, but there is still no substitute for focused and coached observation. To improve U.S. government efforts to face the problem of identifying potential terrorists (including eliciting information, and determining truth or deception), it is critical to understand how best to train adults who have that responsibility. Based on feedback from years of training, experience, and a review of the relevant literature, I suggest that a structured scenario-based curriculum could play a major role in heightening the awareness of deception detection techniques and elicitation methods employed by today's law enforcement and intelligence

professionals. In a modern, global environment, the need exists to develop a curriculum that would provide training in behavioral analysis and noncoercive, rapport-based information elicitation to inspectors and agents with a specific emphasis in Middle Eastern and Arab cultures.

<div align="center">**Detection Deception**</div>

Detecting Deception Training

There are no absolutely infallible ways to detect deception based solely on behavioral analysis. However, when used as a complement to an individual's elicitation skills, individuals can become better collectors of information. This study's objective was to define, identify, and provide a structured curriculum design to educate law enforcement and intelligence officers to detect and elicit information across cultural boundaries. The three methods used to examine the deception detection process included reviewing current research, using personal observations across a range of training experiences to identify effective efforts to train individuals in deception detection, and reviewing workshop evaluations from an extensive set of deception detection workshops.

As a subject matter expert, the theory behind my structured curriculum design for educating adults to detect deception and elicit information across cultural boundaries is based on my 30 years of conducting interviews, interrogations, and polygraph testing in more than 100 countries, and in some of the most volatile environments in the world. As will be further discussed in the Literature Review, a great deal of analysis and testing exists to support my opinion, based on the practical application of interviews,

interrogations, and polygraphs, that the best method applied to teach adults deception detection techniques and elicitation skills is scenario-based instruction.

Many instructors across the nation use scenario-based training in instruction, whether it is tactical or technical. Good scenario-based training mirrors complexity by providing context and forcing consideration of the possibility of different courses of action (Lynch, 2005). Without complexity, scenario-based training is just routine practice. Scenario-based training is nothing new, but it has evolved over the years into an effective means of learning. Today, state-approved curricula typically include a series of competencies and performance objectives that students must achieve to pass. This is called competency-based instruction, and it is part of an instructional design system pioneered by the military. As Lieutenant Colonel Aaron M. Zook, Jr. points out: "While the use of the term competency is relatively new to the Army, the term has been in use for quite some time…. The current system has been expanded and renamed Human Capital Management" (2006, p.3). Good scenario-based training should mirror that complexity by providing context and the possibility of different courses of action (Lynch, 2005).

Yet, even with years of experience since 9/11, knowledge of deception detection, the elicitation process, and its relationship to scenario-based training remains fairly limited. Therefore, this study surveyed teaching deception detection and scenario-based training techniques to demonstrate the utility of using scenario-based training to increase a student's ability to learn deception detecting and elicitation techniques.

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Purpose of the Study

The major aim of this research was to share information on scenario-based training in deception detection and information elicitation and this training's utility for adult learners. This study addressed the use of scenario-based training instruction with specific emphasis on using subject matter experts to address cultural issues from around the world. The study also addressed how to design a curriculum for adult learners in detection deception and eliciting information.

The literature review explored training and lie detection accuracy rates and examined the conditions under which such accuracy is maximized. For example, a meta-analytic review of the topic by Frank and Feeley (2003) showed the effect of training on deception detection was moderate, indicating a mean effect size of $r = .20$ across 20 paired comparisons of lie detection training (11 published studies) versus the control group (i.e., those without some type of training). The majority of the studies discussed in the literature review attempted to train lie detectors to meet six critical challenges: relevance, high stakes, proper training, proper testing, generalizability across situations, and generalizability over time. Most of these studies fell short on many of the above challenges (Frank & Feeley, 2003).

Before commencing the following chapters, a brief clarification of two key terms is crucial. The first is Curriculum Structured Design. Within the context of this study, the curriculum structured design is reinforced by three main components. They include a conceptual framework, an assessment of what students should know and be able to execute, and approaches to curriculum integration. Chapter 2 covers literature concerning

adult learning, scenario-based learning, and deception detection. Chapter 3 examines the main variables that contribute to scenario-based training for students and the instructor, while looking at design and development. And Chapter 4 offers strategies to incorporate the content of the preceding chapters to develop scenarios for appropriate curricula. Seen holistically, this curriculum structured design is driven by the training program I developed for a government agency in addition to relevant theoretical literature and practices of scenario-based training.

The second key term is Deception Detection and Elicitation. Simply put, it is about detecting and eliciting information across cultural boundaries for the purpose of educating law enforcement and intelligence officers. Deception Detection and Elicitation is a multi-faceted process that mainly involves subject-matter experts, experiential learning, and the application of scenarios to prepare students for national security threats and the interviewing of subjects. Ultimately, it is a complex skillset that trains one in the art of detecting verbal, vocal, and non-verbal indicators. In this study, deception detection and elicitation is referred to in an educational context to maximize the scenario-based approach.

<div align="center">**Research Question**</div>

The primary question driving the research was: How can scenario-based training be used effectively in increasing adult student learning in detecting deception and eliciting information?

To answer this question, archival evaluation data sheets from a series of deception detection training courses were analyzed. The courses' veteran cadre of instructors and

subject matter experts had an established track record of (a) successfully transferring knowledge gained experientially and through academic study to students in a classroom setting and (b) utilizing these skills in a realistic scenario-based exercise. The scenario-based training's success was traced by the researcher through the robust feedback mechanism of detailed class evaluation sheets which tracked the performance of the instructors, the relevancy of the training in the students' performance of their duties, and the students' views of the opportunity to practice the newly acquired skills.

Summary

The focus of this study was a three-pronged approach to support a curriculum structured design to educate adults in the practice of detecting deception and eliciting information. First, the literature review explored scholarship relevant to deception detection, adult learning, and scenario-based training. Second, evaluation data sheets (archival records) from a detection deception training course were analyzed. Third, curriculum strategies were proposed, while implications and limitations were also addressed.

CHAPTER 2: LITERATURE REVIEW

In order to set the stage for this study, it is necessary to discuss the research in traditional training methods in deception detection, explore how adults learn, and then put those discoveries into perspective with scenario-based training. The issue, as in most studies involving deception detection and the impact of training, is the lack of empirical data or evidence involving the effects or experience of scenario-based training to educate adults in deception detection. Thus, this study's purpose was to provide information about a curriculum-structured design to educate adults in detecting deception and eliciting information through an expert's experiences, a literature review, and training feedback surveys.

The study was principally designed to show the effect of training on deception detection and eliciting responses, and how a properly designed scenario-based training protocol can be used to conduct more effective assessments to enhance particular competencies and performance objectives. The objective of the analysis from the reviews was to determine the success of using scenario-based training in instruction in deception detection (Robinson, 2006). The literature review thus provides an overview of groundbreaking revelations in adult education and recent research that demonstrates the effect of training in deception detection.

The study drew on prior literature and scholarship in the fields of training in deception detection, adult learning, and scenario-based learning. Therefore, the literature reviewed is divided into those three main sections. The first section examines research in deception detection. The next section examines research on adult learning. The third section explores scenario-based training design models and their relationship to other training.

Deception Detection

Deception literature suggests that there are no perfect clues to lying that would allow for foolproof training (DePaulo, Stone, & Lassiter, 1985; Ekman, 1992; Knapp & Comadena, 1979; Zuckerman, DePaulo, & Rosenthal, 1981). The literature also suggests that most people are not particularly skillful or clever at detecting deception (DePaulo et al., 2003; Ekman & O'Sullivan, 1991; Ekman, O'Sullivan, & Frank, 1999; Vrij, 2000). While there may be some who are exceptionally adept (Ekman et al., 1999), it is commonly reported that most people's beliefs about their ability to detect deception are greatly inflated as compared to their actual performance (Blair & McCamey, 2002; Horvath & Jayne, 1994; Mann, Vrij, & Bull, 2004).

There is a strong theoretical rationale in deception detection research that deception (lies) generated in a laboratory scenario differ from deception (lies) faced by law enforcement officers in real-life situations (deTurck & Miller, 1985; Ekman, 1992; Ekman & Frank, 1993; Feeley & deTurck, 1998; Greene, O'Hair, Cody, & Yen, 1985; Hocking & Leathers, 1980; Vrij, 2000). If this research is correct, this must be taken into

consideration constructing an effective deception detection training program utilizing scenario-based training as its delivery method.

There are six challenges or principles presented by Frank and Feeley (2003) that are covered later in this chapter which have evolved in deception detection training. Researchers have shown that there are several acceptable ways to train professionals in deception detection, and have identified certain principles that should be present to meet these challenges to determine whether lie detection training can be developed to empower professionals to improve their deception detection skills. Two of these acceptable ways and/or principles are content in context, and real-world settings (deTurck & Miller, 1985; Ekman, 1992; Feeley & deTurck, 1998; Greene et al., 1985; Hocking & Leathers, 1980; Vrij, 2000).

Content in Context

Effective training can increase a person's ability to detect deception and research supports that premise. According to Blair, Levine, and Shaw (2010), contextual information and the situation impact an individual's ability to determine if someone is being truthful or deceptive.

The literature on deception detection is an excellent example of an area in social science where the power of the situation is underappreciated. Past theory and research on deception has been characterized by a myopic focus on the internal psychological states and corresponding nonverbal behaviors of liars and has failed to adequately consider the situation and context in which truths and lies are told. As a result, deception research has been looking for cues to deception in the wrong places—and the existing literature

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presents a distorted view of people's ability to correctly assess if others are lying (Blair et al., 2010).

The utility of content in context (environment) was shown in a series of experiments with students and experts. Blair et al. (2010) conducted four case studies using college students from the same university. The students received extra credit for their participation. The methods used included stimulus materials, bogus training controls, and no training controls. Training videotapes were shown to the students in one of the groups while the other group did not watch the tape but were given instructions and then tasked. Whether they watched the video or simply were provided instructions, they were asked to determine which message received was truthful or a lie. The purpose was to determine the effect of nonverbal behavior training on the accuracy of determining deception. The results indicated that the participants' abilities to detect deception increased with training, and individuals who are trained to identify nonverbal behaviors (truthful and deceptive) are more likely to show improvement when asked to determine which nonverbal cues are deceptive or truthful. Their accuracy rate will likely improve with training. Across Blair et al.'s case studies, average accuracy was 75% in the content groups compared with 57% in the control groups. These results demonstrate the importance of situating environment and awareness and the important implications for deception theory. Providing accurate contextual information improves deception detection accuracy (Blair et al., 2010).

What also appears in Blair et al. (2010) is that in contexts where the detection of deception is critical, practitioners have already taken steps to maximize the availability of

contextual information of the types that were considered in this research. Examples of this would be a criminal investigator interviews a suspect after they have collected information from trusted sources; intelligence agencies would cross-check information from human sources against other collected information; banks would ask for verification of employment and income before issuing loans; and retailers would require a valid card, which is checked against an electronic database, before selling items on credit (Blair et al., 2010).

Blair et al. suggested that the simple act of training—independent of training control—may improve the accuracy of detecting deception simply because those in training conditions process messages critically. However, the case studies also determined that unless participants had reasons to think the person was lying, they guessed like a coin toss that someone was lying because they understood that some people would be lying. This impacted the statistical results in some of the case studies.

The research conducted by Blair et al. (2010) determined that contextual information and the situational impact on an individual's ability to determine if someone is being truthful or deceptive impacted the participants' abilities to detect lying study participants. What seems to be lacking in these studies were interactions and scenarios using real-world situations with experienced people involved in the real world doing real jobs and learning from people in real-life situations.

Assessing Training

In a meta-analytical review, Frank and Feeley (2003) showed that the effect of training on deception detection was moderate. This result, based on a grouping of 11

studies, suggests that training persons to detect deception can be done with at least some equally moderate level of success. It might even be that effective training is possible in the proper conditions.

Frank and Feeley (2003) argue that six criteria should be included in any assessment of training. The first criterion is the training must be relevant to the trainees' experience. When training police officers, they are highly likely to encounter situations that require them to conduct interviews and elicit information. As such, the training should include interviews with criminal suspects and witnesses. If one is training intelligence agents, the training could involve assessing a videotape of a meeting or reviewing an intercept of a cell phone conversation. These relevant scenarios allow the student to become involved in direct encounters with the subject matter studied. They learn by doing rather than just thinking about how the training will be applied.

The second criterion is that the training stimulus materials should involve high-stakes situations that are likely to motivate the subjects, elicit real emotional responses, and produce observable behavioral cues to deception. In the latter group, it is common to find researcher designs seen as high stakes if a positive incentive (such as money) is offered for successful deception, and a negative consequence (such as locking the subject in a room and playing loud noises for some period of time) is threatened if the deception fails. The researcher has found no attempt in the literature to measure the difference between high-stakes situations and other such motivational schemes. There seems to simply be the assumption that introducing the commonly used positive or negative consequences produces high stakes and realistic motivation (Frank & Feeley, 2003).

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It is important to note that situations referred to as "high stakes" in some of the deception detection literature, particularly those dealing with measures of autonomic system arousal, have been strongly criticized as being too low in stakes to be useful for generalization to real-world situations, even though in many instances the motivational schemes are either similar to or in excess of those seen in the training material (National Research Council, 2003). While offering money and/or some mild form of punishment may motivate subjects to succeed in convincing an interviewer, it is not hard to imagine the motivation produced by these manipulations pales in comparison with that experienced by someone actually being questioned about being a spy or being involved in a criminal act. Supporting the idea of high-stakes motivation is a small collection of deception detection studies that have used actual criminal suspects to evaluate the effects of high-stakes motivations. The reported accuracies in the detection of deception studies were far higher than in the typical laboratory studies (Blair & McCamey, 2002; Horvath & Jayne, 1994; Mann et al., 2004). It should be noted, however, that some differences in the detection of deception studies could result from a selection bias in stimulus materials. While it may not be possible to produce motivation in laboratory studies that corresponds to real-world motivations, future studies must attempt to close this gap to become more confident regarding the generalization ability of those results. One suggestion would be to use computer-based training. The motivation would be achieved through interacting with the role players who provide real-world direct encounters for the students.

The third criterion proposed by Frank and Feeley (2003) was to determine if there was a training technique that would transmit the material effectively. Effective techniques

should include transmitting some form of knowledge about the behavioral cues to look for, the opportunity to practice, and feedback about performance. The behavioral cues trainees are to identify, of course, should also be supported in the empirical literature, as empirical data through research provides credibility, reliability, and validity to the training techniques. The interactive videos used in computer-based training provide the students an opportunity to view behaviors and apply known techniques to detect deception. Each role player has unique skills and knowledge to test the students' knowledge and skills.

The fourth criterion states there must be adequate pre- and posttest measures of judgment accuracy to assess the impact of training. Frank and Feeley (2003) argue that essential to the fourth criterion is the use of different pre- and posttest judgment materials; doing otherwise could introduce artifacts into the results that were not an effect of the training. Their research also suggests that a deliberately vague idea of the members of liars or truth tellers' groups should be given to the trainees to avoid a response bias among trainees.

The fifth criterion suggested by Frank and Feeley (2003) is that training should be generalized to different high-stakes situations. While this is desirable, Frank and Feeley point out those highly reliable behavioral cues to deception have not yet been discovered. Additionally, some research has suggested that behavioral cues to deception may vary by context. If this is true, it may be necessary to train lie catchers in very specific contexts to increase accuracy. Part of this generalizability criterion includes ensuring that the training will extend to the "real world." Such generalizations have yet to be demonstrated. While

it may be argued that materials used for training in some of these studies closely simulated the real world (experiential, (a) the time is right for them to learn, and (b) the process is positively recorded), there is clearly an important distinction between making an assessment of deception while watching an interview on videotape versus making an assessment of deception while being an active participant in a dynamic interview process. For the training to be effective, trainees must be able to internalize the material learned and apply it.

The final criterion suggested by Frank and Feeley (2003) is that the training should show time generality. Any improvement in lie detection should last for some period of time beyond the training period itself. While not explicitly stated by Frank and Feeley, this criterion also suggests it might be desirable to repeat the training depending upon the longevity of the training effect.

While the six criteria suggested by Frank and Feeley (2003) form a good starting point and suggest a useful model to evaluate deception detection training, Frank and Feeley's perspective is limited in much the same way as the general literature in the field. That is, the training and the trainee are somewhat isolated from the social interaction process inherent in deception tasks in real-world experiences. In other words, the approach to training the trainee focuses primarily on viewing stimulus materials in a laboratory/classroom setting, as an example, followed by an assessment of deception.

Real-World Settings

This section describes some issues that must be addressed in moving laboratory/classroom training to socially interactive "real-world" settings. While making

the transition from the laboratory/classroom setting may be difficult, it is necessary for researchers to address this transition to gain confidence in the actual value of their empirical assessments (Frank & Feeley, 2003).

Following Frank and Feeley's relevance criterion, it has been my experience that training to detect deception in the real world must be addressed first. Real-world training should be part of a broader orientation, usually involving a specific mode of social interaction designed to gather reliable information. Common interactions include embassy walk-ins, elicitations, interviews, and interrogations. In real-life, the detection of deception is a small part of a larger information-gathering process. For that reason, it is desirable that training be connected to, or understood in the context of, the particular social interaction procedure or style that will be used by the trainee. In many ways, this is simply an expansion of Frank and Feeley's (2003) relevance criterion, but it is unique in that training would include, for example, exposure to detection of deception within a specific form of social interaction. This brings into action all of the issues about social interactions and how the sender and receiver may affect each other. Failure to understand this point could lead to an incorrect understanding of the meanings of given behaviors. An expression of this concern can be found in the literature. In Kassin and Fong's (1999) project, trainees were taught a model of deception derived from nonaccusatory interviews and then were asked to judge materials that clarified featured accusatory interactions. The accuracy of the trained deception detection specialist was, as would be expected, below chance level and lower than in most other similar studies.

After basic knowledge about the social interaction and detection deception is transferred to the practitioner, the opportunity to practice and to receive feedback must be given; however, although practicing the assessment of video material and being given feedback, as suggested by Frank and Feeley (2003), may be an effective way to build basic detection skills, it is insufficient to develop interaction skills.

Role-playing is a more effective start to developing interaction skills because role-playing training could begin with having participants interview each other to develop a general "feel" for the interviewing process; however, role-playing is not likely to be sufficient enough to help develop deception detection skills (Frank & Feeley, 2003). To help develop deception detection skills, actors who are specifically trained to exhibit relevant cues to deception might be used to form a second role-playing unit in the training program. All role-playing should include simple feedback from an instructor who is both experienced in conducting training and in the interaction format being taught. The effectiveness of this type of detection of deception training has not yet been evaluated (Frank & Feeley, 2003).

It should also be noted that, while role-playing may be useful in developing basic interviewing and detection of deception skill sets, role-playing will not be extensive enough to fully prepare participants for the complexities of conducting social interactions and detecting deception in the real world. Additional on-the-job training will be needed. One form that on-the-job training could take would be similar to the practicum training that is part of many training schools, including those in the polygraph testing field (Frank & Feeley, 2003). Consider two primary training situations; the first is for the trainee to

watch an experienced professional while he or she interacts with real subjects. Essential

to this observation process is following up with an active dialogue between the

practitioner and the trainee. This dialogue should include comments from the practitioner

about what he or she witnessed in the room and questions from the trainee about what his

or her observations revealed (Frank & Feeley, 2003). The second training situation

involved in a training practicum occurs when the trainee performs the critical job task

with an actual subject while the experienced practitioner observes the interaction. This

step typically involves following up with an active dialogue between the trainee and

practitioner about what was done properly and what could be improved (Frank & Feeley,

2003).

The practicum's duration should be determined by the complexity of the task for

which the trainee is being prepared and some assessment of the time necessary for

trainees to develop skill sets at an acceptable functional level. Current training programs

that include practicums range from a few weeks to more than six months; however,

empirical information about the effectiveness of these programs is currently lacking

(Frank & Feeley, 2003).

A practitioner's learning to deal with complex situations should not be limited to

formal training programs; rather, the practitioner should be given skills to continue to

assess and improve performance after an official training period has ended (Frank &

Feeley, 2003). In complex interactive environments, it is impossible to specifically train

an individual for every possible situation that may arise. One approach to dealing with a

complex interactive environment has been described by Kolb's (1984) experiential

learning cycle, which involves the learner having an experience, reflecting upon the experience, formulating abstract concepts and generalizations about what was experienced, and finally, testing the concepts in new situations. Kolb's model could be integrated into many training processes and could prove to be useful for encouraging lifelong learning. Kolb's learning cycles are applicable in all or even most situations and provide a framework for assessing the value of training over a longer time frame than is currently the case.

Adult Learning Models

According to Knowles, Illeris, Jarvis, and Kolb, pioneers in the study of adult education, adults learn best when (a) they understand why something is important to know or do, (b) they have the freedom to learn in their own way, (c) learning is experiential, (d) the time is right for them to pursue further education, and (e) the process is positive and encouraging (Knowles, 1998).

Although Knowles' theory of andragogy remains the best known model of adult learning and Kolb's experiential four-stage learning cycle shows how experience is translated through reflection in concepts, Illeris' s three dimensions of learning theory (2002) and Jarvis's experiential learning model (1987) both provide compelling insights into adult learning.

Illeris's Three Dimensions of Learning

Illeris (2002) is most interested in the learning process itself. The process, depicted in Figure 1 is an inverted triangle, addresses cognition, emotion, and environment as the three primary dimensions of learning. Although one dimension might

be emphasized more than the others, all three are always present in a learning activity, as

represented by the circle around the triangle.

COGNITION   EMOTION

FUNCTIONALITY   Acquisition   SENSIBILITY

Meaning   Mental
ability   balance

Interaction

SOCIALITY
Integration

ENVIRONMENT

SOCIETY
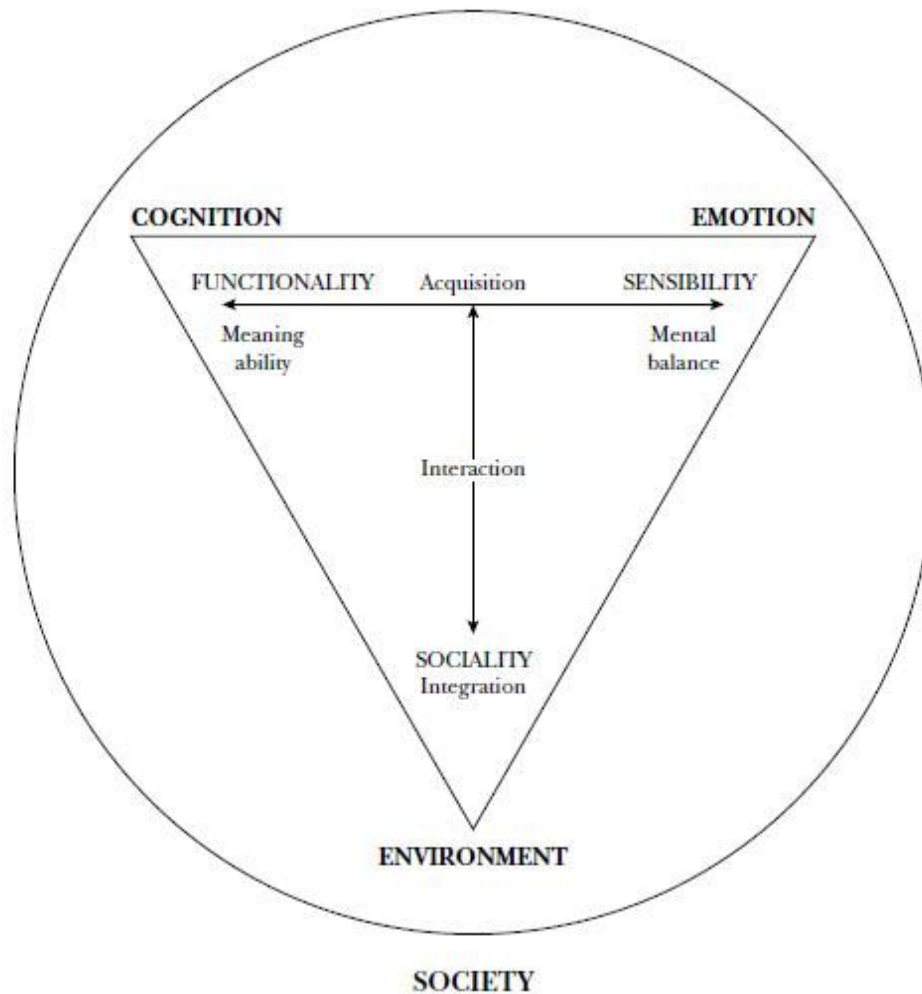
Figure 1. Illeris's learning processes and dimensions.
Adapted from Illeris, 2004b, p. 82. Reprinted with permission.

According to Illeris, the dimension he labels "environment" or "sociality" in the

triangle is the dimension of external interaction, such as participation, communication,

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and cooperation. Environment serves as the personal integration in communities and society and thereby also builds up the sociality of the learner" (2004, p. 83). This dimension, therefore, entails the interactions and contributions of other people, and the resultant impact of those societal stimuli on our learning (Illeris, 2002). By contrast, the cognitive dimension involves knowledge and skills, while the emotional dimension consists of feelings and motivation—although cognition and emotion are both internal possesses that interact simultaneously in the acquisition of knowledge or skills when studying learning.

Psychologists have historically focused on cognition, defined as "both knowledge and motor learning, both…controlled by the central nervous system" (Illeris, 2002, p. 18). Conversely, emotions involve "psychological energy, transmitted by feelings, emotions, attitudes, and motivations which both mobilize and, at the same time, are conditions that may be influenced and developed through learning" (2002, p. 18).

In the Illeris model, learning begins with perception, one of five stimuli which he denotes as the "raw material…where the surrounding world comes to the individual as a totally unmediated sense impression" (2002, p. 120). Next, transmission occurs when someone else passes on information or transmits "specific sense impressions or messages" (2002, p. 120). Subsequently, the subject gains experience, and while this experience can include both perception and transmission, Illeris limits the use of the word "so that experience presupposes a particular activity, i.e., that the learner is not simply receiving, but also acts in order to benefit from the interaction" (2002, p. 120). Experience then gives way to imitation, resulting from the learner attempting to model

another's action. Finally, activity or participation entails the learner engaged in a goal-directed activity, sometimes participating with others as in a community of practice. Illeris cautions that these five

> input[s] of the learning process…should not be regarded as separate, but rather as characteristics which can be combined in a single learning event, each of them being more or less present or prominent in a pattern unique to the specific situation. (2002, p. 227)

Citing a science lesson focused on the cognitive element of learning a particular chemical process, Illeris demonstrated how cognitive and emotional factors combined to influence how diverse students experienced the lesson differently. Influenced by their individual emotions, motivations, and psychological energy, each student's learning "will be closely connected with how the emotional dimension has been functioning" (2002, p. 20). For example, depending on the cognitive-emotional and social interaction, it is possible that for individual students, learning could be "distorted, or perhaps no learning at all has taken place, or something quite different will be learned: maybe a negative impression of the teacher, or of some other students, of the subject, or of the school situation in general" (2002, p. 21).

Additionally, external societal conditions could influence the process, such as whether the learning is to be examined, or whether the learning is needed to function in society. This model, of course, can be similarly applied to any type of adult learning activity. An adult learning to read, for example, engages both the cognitive and emotional dimensions, so mastery will be influenced by environment and/or social interaction with

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the instructor and fellow students. Furthermore, the learner may also have internalized society's expectation that literacy is both desirable and necessary to function in the marketplace. Those expectations undoubtedly interact with the other two components of the process.

The strength of Illeris's model lies not only in its comprehensiveness, but also in its simplicity. We can all relate to how a learning activity reflects cognitive, emotional, and social dimensions. Much of adult learning research and theory building emphasizes the cognition, so Illeris's inclusion of emotional and social dimensions is a real strength. Further, his model can be used to understand resistance to or rejection of learning as well as something as powerful as transformational learning:

> Very special and demanding situations, often with a crisis-like character, can lead to deep and comprehensive transformative learning processes that include simultaneous changes in all the three learning dimensions and have to do with the very identity of the learner. (2002, p. 229)

And while he does not claim it to be a model of *adult* learning per se, its application to pre-adults seems limited due to their level of cognitive and emotional development and their awareness of the societal context.

Jarvis's Experiential Learning Model

Building on Illeris's research, Jarvis (1987, 1995) created an elaborate model that depicted various responses to potential learning situations. To develop his own theory, Jarvis required adult groups to apply Illeris's model to their learning experiences. Thus, Jarvis was able to develop a model which allowed students to take different avenues to

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Illeris's template. Depending upon the learner's approach, the end product is to understand the resistance to or rejection of learning as well as something as powerful as transformational learning.

Jarvis's model begins with an adult's life situation, or more correctly, an adult's experience: "Even bad experiences may be regarded as learning experiences…. *All* learning begins with experience" (1987, p. 16). Some experiences, such as driving a car or performing household routines, however, are repeated with such frequency that they are taken for granted and do not lead to learning.

In fact, the learning process begins with a disjuncture between biography, all that a person is at a particular point in time and experience, and an incident that a person is unprepared to handle. "Disjuncture occurs when our biographical repertoire is no longer sufficient to cope automatically with our situation so that our unthinking harmony with our world is disturbed to some degree or other" (2006, p. 9). When previous learning is no longer adequate for the present situation, people are consciously aware that they do not know how to act. We have to think, to plan, or to learn something new: "Learning then always begins with experiencing" (2004, p. 93). This "inability to cope with the situation unthinkingly, instinctively, is at the heart of all learning" (1987, p. 35).

Jarvis theorizes that all learning begins with the five human sensations of sound, sight, smell, taste, and touch. He believes that "our learning is ultimately dependent on our body and biology is a significant factor in the learning process—not because of our genes, but because of the way that our senses function" (2006, p. 13). In everyday life we meet unfamiliar situations; for instance, we hear a new sound or we read a word whose

meaning we do not know. Through asking others, by chance, or by design, we acquire the

meaning of the unfamiliar sensation. The meaning is then memorized and practiced. For

example, we may try to use a word whose meaning we have just learned until it becomes

a part of us and we once again take the word for granted. The significant thing here in the

learning process is that the original sensations we identify have been transformed into

knowledge, skills, attitudes, values, emotions, and so on (2006, p. 14).

For Jarvis, all experience occurs within the learner's individual conceptualization

of the world, which is ever changing. Specifically, their constructs are altered over time

in relation to the changes that occur both in the wider world in which it exists and to the

individual's involvement in it, and so "[T]he person exists in a 'flow of time' within the

life world" (2006, p. 7).
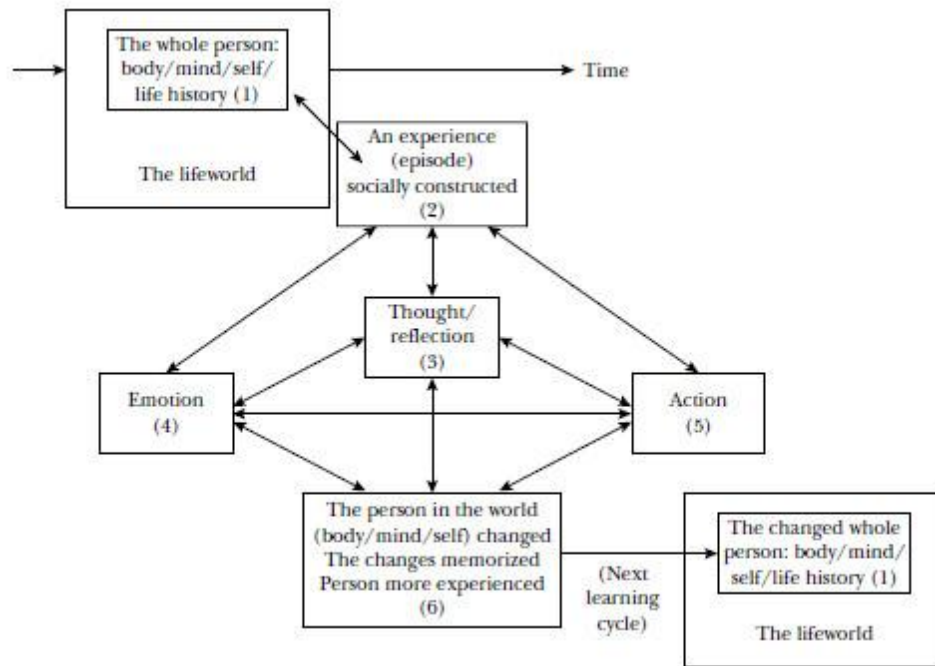
Figure 2. Jarvis's transformation of the person through experience.
Adapted from Jarvis, 2006, p. 16. Reprinted with permission.

The learner is more than a cognitive machine. The student is a whole person,

made up of the mind and the body, which comes to a learning situation with a history,

and a biography that interacts with the experience that generates the nature of the

learning. As can be seen in Figure 2, Jarvis's model of the learning process begins with

the whole person who encounters an experience in his or her social context, one that

cannot be automatically accommodated or assimilated. This creates the disjuncture

between a student's biography and the new experience, creating a state of unease that can

trigger learning. If, in contrast, the individual chooses to ignore or dismiss this unease, no

learning occurs (as evidenced by the two-way arrow between Boxes 1 and 2).

The next level of the model portrays three ways of learning, namely thinking, doing, and experiencing emotion. These can occur in any combination, as indicated by their respective arrows in Figure 2. Speculating that emotions transform thought into action, Jarvis posits that either impetus can dominate the learning process, develop critical thinking, hone problem-solving skills, deepen introspection, or pique active and rational thinking. But emotions can considerably impact one's attitude and mode of thinking, thereby shaping one's deepest motivations, beliefs, and values (2006, p. 11).

The result of this process, as seen in Box 6, is a person positively affected by the learning in one of three ways. The aforementioned mental and emotional attributes can change a student's self-concept (2006, p. 17). The learner may incidentally or purposefully place a new meaning on the world and events. And in instances when the learner gains more experiences, he or she will become "more intelligent" as defined by an increased capacity to cope with challenges (2006, p. 17).

The last section of the model, where the first box is repeated in the bottom right corner, is Jarvis's attempt to illustrate the continuous nature of learning. In one's own social world, the changed person encounters another experience that stimulates learning. The model is aptly summarized by Jarvis's contention that human learning is a composite of genetic, physical, biological, mental, emotional, and ethical experiences (2006, p. 7).

Of all the models reviewed in this section, Jarvis's is arguably the most comprehensive because it situates learning in a social context and examines learning as an interactive phenomenon, as opposed to evaluating it as an isolated, internal process. Not only does Jarvis's most recent book (2006) detail the learning process, it also draws

from a wide body of literature to provide an in-depth analysis of the key concept, to include the whole person, the social context, modes of learning, and the nature of experience itself. Although his early work was constructed from research with adult learners, Jarvis is clearly interested in understanding and explaining *human* learning, not just adult learning. He does, however, imply that his model is perhaps more readily applicable to adults, because young children lack the cognitive skills, emotional range, or action alternatives available to adults. Further, the disparity between children's and adult's contextual and situational experiences significantly impacts their diverse learning process. Over the past 20 years, Jarvis's model has evolved considerably from its original 1987 version. And yet, the processing of experience remains fundamental to his thinking.

Kolb's Cyclical Model of Learning

Reinforcing the model that learning is experiential, American educational theorist Kolb used a cyclical model of learning to illustrate his premise that "learning is the process whereby knowledge is created through the transformation of experience" (1984). Building upon earlier work by John Dewey and Kurt Levin, Kolb's model entailed four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. The process may begin at any stage, but it proceeds in sequential order. Because Kolb's *The Process of Experiential Learning* was so instrumental in creating meaningful and relevant instruction, it has become synonymous with authentic assessment and learning methodology in adult and informal education, and is currently considered a major impetus to lifelong learning.
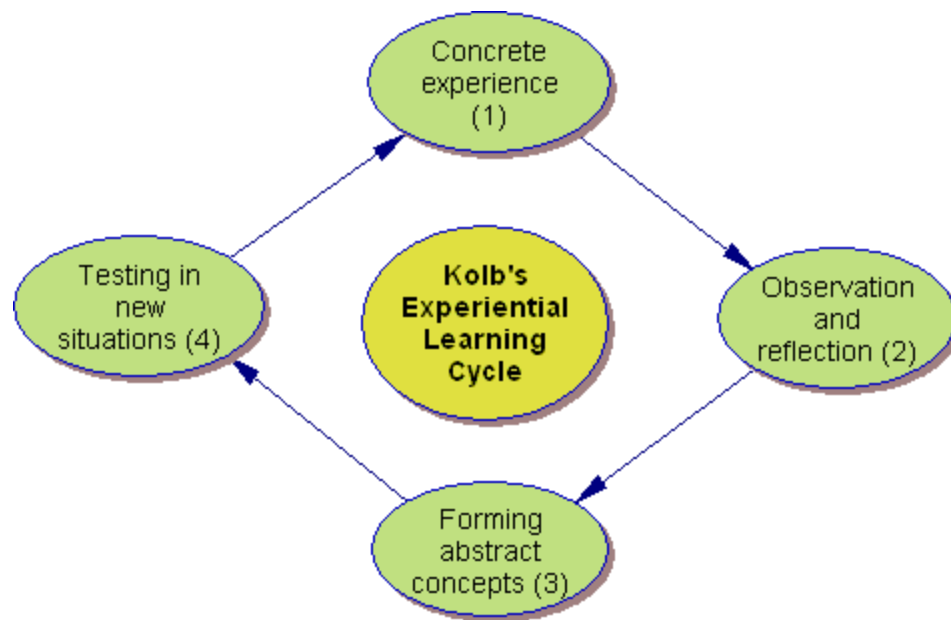
Figure 3. Kolb's experiential learning cycle.

Kolb's four-stage learning cycle (Figure 3) depicts how experience is translated

through reflection into concepts, which in turn are used as guides for active

experimentation and the choice of new experiences. The first stage, concrete experience

(CE), occurs when the learner actively experiences an activity, such as observing a lab

session or conducting field work. The second stage, reflective observation (RO), takes

place when the learner consciously reflects on an engaging experience. A student

experiences the third stage, abstract conceptualization (AC), when he or she fashions a

theory or model of what has been observed. The fourth stage, active experimentation

(AE), results when the learner attempts to test a model, theory, or plan for a forthcoming

experience. Kolb identified four learning styles that correspond to these stages correlated

to a student's ideal learning conditions. According to Kolb, Assimilators learn better

when presented with sound logical theories, as compared to Convergers, who perform best when presented with practical applications of concepts and theories. Accommodators learn best when afforded opportunities to gain "hands-on" experience. Finally, Divergers' learning is optimized by receiving a wide range of information. The variety of learner types also accompanies many different learning styles. A fairly recent technique is one offered by Pritchard, known as constructivism.

Learning Styles

Constructivism posits that individuals construct their own understanding of the world by accumulating and interpreting information relative to previous experiences. Significantly, the application of social interaction, intellectual exchange, and experiential study are at the heart of this process. Pritchard suggests that it is through experience that one is able to confront his or her "inner" state of beliefs with the "outer" state of facts. It thus follows that pursuing learning as a social activity may "transform information from past and current knowledge and experience into new personal knowledge and understanding" (Pritchard, 2010). However, constructivism also encourages reexamining the very notions of learning and knowledge.

According to Pritchard, learning is a highly social activity and one that is predicated on interaction. Knowledge is central to this exercise insofar as it is created by learners in the context of social interaction and exchange. As the term suggests, constructivism sees knowledge and understanding as being slowly constructed. Simply put, it is perceived as a process and not a snapshot, as a series of actions and not a swift discovery.

Constructivist approaches range from the apprenticeship model to situated learning. While the former is a method of learning that takes place in real-world situations, the latter is often linked to the notion of authentic learning. In other words, situated learning is where the student undertakes activities within a culture that is familiar and might be applied to future instances.

Parallel to these models is behaviorism. In this context, learning takes place as behavior is modified. For instance, behaviorist strategies are useful in pilot training, "where precision of action and efficiency of effort are called for" (Pritchard, 2010, p. 8). In short, Pritchard offers the premise that students learn best with social interaction.

Although enhancements in the adult learning experience have been attributed to behaviorism, cognitivism, constructivism, and social constructivism (Hung, 2001), for the purposes of this study, eight recognized learning styles were examined to determine which methods are best suited to adult learners' various intelligences: verbal, linguistic, musical, mathematical/logical, spatial, bodily/kinesthetic, intrapersonal, and naturalistic.

For example, learners with musical intelligence have a strong understanding of rhythm, pitch, and timbre, and their comprehension of ratio and regularity among other music-related patterns correlates to strong mathematical-logical problem-solving skills (Nolen, 2003). Because students with spatial intelligence tend to manipulate and create mental images, they learn best from teachers who regularly employ visual stimuli such as pictures, photographs, films, and overheads to enhance instruction. By contrast, bodily/kinesthetic learners understand the world best through physical and active learning strategies (Nolen, 2003).

The pragmatic complement to learning theory, at both the macroscopic and microscopic levels, is the study of how to improve instruction. Whereas learning theory is based on the student's acquisition and retention of information, it is complimented, at both the macroscopic and microscopic levels, by an examination instructional approaches that optimize instructional delivery (Nolen, 2003).

In early 20th century, adult learning was evaluated sporadically; it was not until the 1970s that educators focused systematically on the distinguishing characteristics of adult learning. Due in part to the field's efforts to differentiate itself from other genres, adult learning research shifted away from educational psychologists' typical investigations toward a single theory that could sufficiently distinguish between child and adult pedagogy. But just as there generally is no explanation of human learning, no single theory of adult learning has emerged to unify the field. Rather, a number of theories, models, and frameworks attempt to capture various aspects of adult learning, each of which has advanced our understanding.

Malcolm Knowles's andragogy was the first and best-known theory. Lesser-known models emerged, to include Illeris's three dimensions of learning that characterized the continuous interaction between cognition, emotions, and social context. Jarvis's model followed, linking the whole person's body, mind, and life history with an experience encountered in the person's social milieu. Finally, Kolb's well-known process of learning through a four-stage cycle taught us how experience is translated through concrete experience, observation, and reflection, forming abstract concepts and testing in new situations.

Scenario-Based Learning

Elliot demonstrated that it takes 10 years of experience to develop expertise in any field (2005). The problems thus arise as to how practitioners can be prepared for events that are either rare or have never occurred but are likely to happen in the future, and how such expertise may be accelerated. In addition, there is a growing need to find ways of allowing practitioners to practice managing their skills under conditions that induce the same emotional responses they would feel in real incidents. By doing so, practitioners can learn how to make decisions under such constraints and to utilize them to their best advantage. When practitioners are unable to rely on their own personal field experience to develop expertise for managing rare events or occurrences, scenario-based training (SBT) may provide the opportunity for practitioners to experience what it is like to make decisions under such conditions. Scenario-based training is defined as "learning that occurs in a context, situation, or social framework. Scenario-based training or learning is based on the concept of situated cognition, which is the idea that knowledge cannot be known or fully understood independent of its context" (Kindley, 2002). Scenario-based instruction/training is grounded in situated learning theory, which focuses on the importance of contextualizing learning activity in real-life scenarios and contexts (Kindley, 2002). In scenario-based training, learners participate in fictional or nonfictional context-based meaningful learning environments and collaborate with other participants to complete activities structured into scenarios reproducing real-world situations. Learners' decisions may affect the scenarios' outcomes. Continuous feedback is provided for guidance and scaffolding. The benefits of scenario-based training and its

successful uses in language teaching are well documented (Gee, 2004). Scenarios are selected to reflect common and/or particularly important situations that are likely to occur in the actual language use (Gee, 2004).

Scenarios and case studies are also common ways to structure business-related knowledge. Scenario-based training is therefore a paradigm particularly suitable for teaching business language. As an example, in the case of business English, common business scenarios can be used that result in an authentic, immersive learning environment (Gee, 2004). In such an environment, linguistic knowledge can be acquired directly as tacit knowledge, without formalizing it as grammar rules or vocabulary lists. At the same time, scenario-based teaching allows learners to focus on the target context of language usage (in this case, business English communication), resulting in more student interest and involvement in the learning tasks (Gee, 2004)

Scenario-based training can achieve three objectives. First, it can establish that the scenario is grounded in the reality of the job. Second, it can ensure that the scenarios are focused on a few specific competencies/performance objectives. Without the focus, the learner may leave the training wondering, "What was the point of that?" Third, different scenarios can be planned to address different objective combinations to ensure that the training covers all aspects of the topic without being too repetitive (Biros et al., 2003).

Technology Challenges

A study at the Air Force Institute of Technology (Biros, Fields, & Gunsch, 2003) found scenario-based training for deception detection in the computer field an optimal way to teach students. Biros et al. noted that computer defense is not perfect. Each year

hackers exploit hundreds of vulnerabilities in information systems even though millions

of dollars are spent on information security. Firewalls, Intrusion Detection Systems, and

patch management software all help to increase systems' security, but they are only

perimeter defenses. Once inside, a hacker can do significant damage and the vulnerability

to deception is great. At that point, users become the last line of defense. Biros et al.

describe two field studies in which scenario-based training was used to teach information

systems users how to detect deception in the information they use. The first study

provided deception detection training to human resource specialists who queried a

database to get information they needed to make decisions about personnel in their

organization. Deceptive data was planted in the database. The second study provided

training to communications specialists using a computer-based training system called

Agent99. In both studies, scenarios were developed as a foundation of the training

programs provided. Using the scenarios helped keep participants involved and focused on

the training. More importantly, the subjects who received the scenario-based training

curriculum improved their knowledge of deception and their ability to detect deceptive

data in information systems.

A key underpinning toward training users to detect faulty data is Signal Detection

Theory (Phipps & Merisotis, 1999). Basically, Signal Detection Theory requires the user

to differentiate between good information (noise) and the manipulated information or

deception (signal). The goal is to identify ways to amplify the noise so that users can

identify the deceptive data. Thus, in the case of detecting manipulated information, the

goal is to help the subject better identify the deceptive information when he or she

encounters it. While Signal Detection Theory sufficiently explains the task to be accomplished, it does not represent the learning subject's need to understand how to identify the deceptive information.

The literature on signal detection, learning behaviors, and domain knowledge suggests that greater familiarity with a given information domain will lead to greater detection performance. The goal, then, is to devise a domain-specific training program capable of providing subjects with meaningful instruction about how to detect deceptive information in the information systems they use. The study below demonstrated that training based on scenarios developed for specific information domains can be used to improve user deception detection performance.

Human Resources

A study was conducted at a military training base in the Southeastern United States to determine just how good employees were at detecting deception (Cao, Crews, Lin, Burgoon, & Nunamaker, 2003). The study involved 205 military human resources specialists whose job was to query a human resources database (an exact replica of a system they used on the job) for information and then advise information specialists. They attended two training sessions with their superiors on human resource decisions. With the permission of the unit commander, the researcher was granted temporary access to the human resource system to strategically manipulate or change the information to attempt to get subjects to make faulty recommendations to their superiors. In order to keep the task relevant for the subjects, the researcher developed a series of decision-making scenarios that had to be answered by querying the database (Cao et al., 2003).

The study's goal was to learn if training would help the subjects improve their ability to detect the deceptions, and if a combination of a warning and just-in-time (JIT) training would improve their overall vigilance. The military personnel were divided into four groups: a control group, a traditional training group, a warning-only group, and a warning with JIT group. The control group received no training in error detection and got no other information about errors in databases. The groups were also subdivided by experience level. The members of some of the groups were new to the human resources field while other groups had more experienced members (5 to 7 years' experience on average) (Cao et al., 2003).

The three trained groups received specialized training in the form of deception tactics based on a taxonomy developed by Johnson, Grazioli, and Jamal (1993). The students underwent a short training program that instructed them on the deception methods and how one might detect those tactics. This training was delivered in a traditional classroom setting with a lecture and presentation slides. The goal was to provide the subjects with the training early in their human resources course, then return at a later date (without warning) to test their ability to detect deception. Both the training and the subsequent testing were based on scenarios developed by a subject matter expert in the field of military human resources to be reflective of (i.e. relevant to) the day-to-day duties of the participants. In order to complete the task in each scenario, the participants were required to query the human resources database for information, review the information, and draw conclusions so they could advise their commanders appropriately.

Failure to identify the deceptive information resulted in the participants making suboptimal recommendations to their commanders (Cao et al., 2003).

For the introductory training session, all participants demonstrated a clear improvement on the knowledge test and on the judgment test. Similarly, for the cues instruction, there was an improvement in the knowledge test and in the judgment test. There was also improvement across sessions for both the knowledge and the judgment tests. In short, the scenario-based training was effective at improving participants' ability to understand and detect deceptive information in various modalities (Cao et al., 2003).

Previous research has demonstrated that deception detection is a difficult task to accomplish (Secretary of the Air Force [SECAF], 2000). This was found to be true in interpersonal deception when information was communicated by automated means (Goodgride, 2002). However, the Human Resources and Communication Specialist study depicted above (Cao et al., 2003) demonstrated that with the appropriate training, information technology users could increase their ability to detect deceptive information.

A primary ingredient in the training sessions provided in the Cao et al. study was that scenario-based deceptive situations were used; participants could witness deception taking place, learn the basic deceptive tactics, and understand what indicators suggest the presence of deception. The success of the training in Cao et al.'s study is promising. While it may be difficult to develop scenarios appropriate for every information domain, these field experiments demonstrated both that it is possible and can be effective. Including deception detection scenarios as a means of teaching information security and security technologies could significantly improve the students' learning success. The

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study further demonstrated that scenarios are indeed a promising curriculum tool. Developing the scenarios was reported to be a difficult task because not every information domain allows for ready examples of deceptive situations. However, the return in the form of participant deception detection improvement suggests that developing domain-oriented scenarios is a worthy investment. Future research activities that focuses on developing templates for creating useful scenarios are encouraged (Cao et al., 2003).

Summary

This literature reviews shows that developing a curriculum in scenario-based training to educate adults in the field of detecting deception and eliciting information requires a blending of knowledge from many disciplines. Research supports using scenario-based training as an acceptable way to train professionals when the environment is fast-paced with a realistic, dynamic setting versus traditional classroom environments. The famous dictum of Confucius around 450 BC suggests the following:

- Tell me, and I will forget

- Show me, and I may remember

- Involve me, and I will understand.

The literature supports the idea of learning as a process whereby knowledge is created through the transformation of experiences (Kolb, 1984). The questions of how to prepare practitioners for events that may be rare or have never occurred, but are likely to happen in the future, and how such expertise may be accelerated, are always problems in the area of national security.

CHAPTER 3: EVALUATIVE SUPPORT THROUGH SURVEY RESULTS

Methodology

We have explored deception detection in light of contemporary issues, historical efforts, and existing research. Now, we will turn to the system of procedures that acts as the backbone to the central research question: How can scenario-based training be effectively used in improving adult learning of deception detection and information elicitation? What follows is a description of how the survey was designed, the assessment of variables, relevant outcomes, implications of results, and the limitations of study. This chapter contains the empirical manifestations of workshop experiences for the overall goal of using scenario-based training in adult deception detection curricula.

The training feedback survey was completed by 1,788 participants who were instructed to complete a course evaluation questionnaire; I collected the archival data between February 2005 and February 2006 from evaluations obtained from the scenario-based training course I developed that was given biweekly during this period.

To be clear, the survey is not a theoretical assessment of deception detection. Nor is it an investigation of conceptual research. Rather, the survey expresses the opinions of participants on a numerical scale. This is useful in indicating what worked and what did not. The survey thus validates the results of the training workshop.

As Robson rightly points out, there exists a sense "in which surveys are a research strategy (i.e. an overall approach to doing social research) rather than a tactic or specific method. In those terms a survey is a nonexperimental fixed design, usually cross-sectional in type" (2011, p. 237). In other words, the fixed nature of this data collection serves as a framework for information collection and analysis and the data results suggest that, despite a few missing evaluations, the overwhelming majority of participants responded positively to scenario-based training.

Following Glasow in the *Fundamentals of Survey Research Methodology*, this data will be used determine whether or not specific objectives have been met (Isaac & Michael, as cited in Glasow, 2005). The main questions raised in this survey reflect effectiveness and practicality.

Sampling

A total of 1,788 participants were surveyed for this work and the research procedure focused on three specific areas: the fulfillment of course objectives, the utility of the training, and the practicality of the exercises. Concomitant with these are key survey questions: Did we meet the course objectives? Did the learning aids enhance the training experiences? Did the learning activities encourage participation? Did the learning experience provide opportunities to practice and reinforce what was taught? Were the training and scenarios good simulation of the tasks that are actually performed on the job? Table 1 later in this chapter elaborates on the main variables that are listed below:

- Participation and encouragement of learning aids
- Opportunities to practice and reinforce

- Effect of training on participant's knowledge

- Usefulness of training in job performance

- Relevance of exercises on tasks performed

- Needs/expectations of course.

Further discussions in this chapter detail the precise quantitative results of these variables and questions. The analysis is descriptive and presents the survey in an explanatory fashion.

Design and Development

The objective of this survey was to essentially gauge the perceived efficiency with which the training addressed the requirements of educating personnel and reinforcing knowledge of job-based deception-detection. Scenarios are only effective if they are applicable to the subject matter and are conducted in a realistic format to convey subject content effectively, which is why the survey was focused on the perceived effectiveness and applicability of the training. The survey, a standard U.S government evaluation for training, was distributed to all participants from February 2005 to February 2006. Subjects were told to choose how strongly they regarded the training to have addressed the questions from a range of 1 to 5, 1 being the lowest concurrence to the question and 5 being the strongest concurrence.

The key areas of analysis surround eight main components of scenario-based teaching. These include objectives, materials, activities, length, knowledge, instruction, evaluation, and job applicability.

Objectives are set once the training commences and are judged to have been met or not at the end of the workshop. Training materials serve the purpose of simplifying concepts so they are easy to understand. The learning activities prepare students for real world application. The length of the training sessions is tailored to suit course content; trainees subsequently decide if the length was sufficient or not. For knowledge, the survey queries about the workshop's ability to equip trainees with the appropriate understanding of scenario-based training; put differently, participants are asked if the training increased their subject-matter knowledge. Instruction refers to how the material was taught by the teacher in addition to professionalism, preparation, responsiveness, and biases. Evaluation is carried out in the form of surveys at the end of training. Lastly, the variable known as job applicability measures the perceived usefulness of instruction on real work performance.

Each variable, briefly described above, possesses different intentions yet they complement each other to support the training goals. Data on the following pages shows the reader which variables received high scores and which did not.

This chapter, then, presents the answers to the most relevant questions pertaining to scenario-based learning, Questions 14, 16, and 17 (for a full itemization of the survey questions, see Appendix A). .

- Question 14: The training will be useful in performing my current job.
- Question 16: The practical exercises were good simulations of the tasks that I actually perform on my job.
- Question 17: The course overall met my needs and expectations.

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Administration

  The government course moderator administered the surveys. The moderator distributed and collected the surveys. They were then provided to me once the class was completed. 1,788 participants were accounted for and 19 questions were asked regarding the training program. A survey evaluation form, similar to the checklist in Chapter 4, was the primary device used to gather responses. The data was then organized in tables and graphically displayed each of the 19 variables.

  Surveys were administered in a closed environment that guarded the privacy of each participant. The trainees were given appropriate time to reflect on their learning experience. They were asked to respond to each question as they saw fit, on a rating scale from 1 to 5. The survey was not designed to be a complex and lengthy document. Rather, it was standard structured U.S Government course evaluation form that highlighted the main components of the training such as instructor performance, usefulness of the training, effectiveness of learning aids and activities, etc. Formulating the survey in a straightforward approach to numerically assess 19 variables seemed helpful not only for participants to describe their observations, but also for improve future training modules.

  To yield the most honest and authentic responses, the timing of the surveys was key. The survey was provided immediately after the completion of the course for the students to complete while the course content and exercises were still fresh in mind. Surveys were both voluntary and anonymous.

Outcomes Overall

The 19 chosen variables, as can be seen in Table 1, were intended to yield opinions of participants based on the knowledge they received. By quantifying results in the format of scores ("5" being the highest), participants were able to convey their impression of the efficacy of each variable. The variables include the individual's judgment of the training, how intelligible the material was the preparation and proficiency of the instructor, how conducive their involvement was, the extent to which the program knowledge improved participants' understanding, and the impact of training on real-world job performance. In essence, the variables reflect what the trainees felt, both objectively and subjectively, about the instruction they received.

Table 1

Frequency Statistics: All Variables in Order of Survey Questions

Variable	Variable Code	N Valid	Missing	Mean
Objectives Met	Objective	1787	1	4.82
Materials Easy to Understand	EasyUnd	1786	2	4.72
Learning Aids Helpful	LearnAid	1785	3	4.72
Learning Activities Encouraged Participation	LearnAct	1776	12	4.85
Opportunities to Practice and Reinforce	OppPract	1739	49	4.79
Length of Course Sufficient	Length	1747	41	3.32
Training Increased My Knowledge	CrsKnow	1754	34	4.84
Instructor Prepared	InsPrep	1788	0	4.90
Instructor Demonstrated Thorough Knowledge	InsKnow	1786	2	4.92
Instructors' Responses to Questions Clear	InsClear	1787	1	4.86
Instructor Free of Bias and Prejudices	InsUnbias	1788	0	4.89
Instructor Professional	InsProf	1782	6	4.91
Training Facilities Conducive	FaciLrn	1778	10	4.79
Training Will Be Useful in Performing Job	TrUseJob	1717	71	4.84
Received Training When Needed	TrNeeded	1711	77	4.18
Practical Exercises Simulated Tasks I Perform	ExSimul	1683	105	4.81
Course Met My Needs/Expectations	CrsMet	1788	0	4.80
Instructor's Performance Met My Expectations	InsMet	1786	2	4.86
Training Facilities Met My Needs/Expectations	FacMet	1785	3	4.78

Significantly, the data above reveal that the overwhelming majority of responses are near the score of 5, which suggests that the bulk of participants indicated their training to be largely effective. Since the fundamental element of instruction was experiential learning, the survey results demonstrate that participants predominantly expressed satisfaction toward the core objective: Improving deception detection and

information elicitation through scenario-based training. To corroborate this key notion, the next section examines outcomes of the evaluations.

The data presented maintains an impressive consistency of high scores. An initial glance reflects the means to be mostly over 4.5. A deeper examination, however, illustrates that the highest scores address some of the most relevant variables. For instance, the mean results of 4.8 and over include the topics of objectives being met, encouragement of participation, improvement of relevant knowledge, instructor's preparation, instructor's knowledge, clarity of training, the benefit of training on job performance, and how expectations were met.

As Table 1 indicates, nearly all results maintain a consistency of approval and satisfaction by participants. The description of outcomes leads to the next matter, the implications for and significance of scenario-based training.

Ranking by Relevance

These results have been assessed to present the answers to the most relevant survey questions pertaining to scenario-based learning, Questions 4, 5, 14, 16, and 17, through the following criteria which also act as a key for the graphs listed in Appendix B. This analysis of relevant questions is divided into three sections: Learning Aids and Activities, Job Performance, and Overall Expectations.

Learning Aids and Activities

Since the research is dependent on evaluation-based data, satisfaction is measured by the mean results gathered. Two key variables directly address learning activities.

Examining these factors can numerically display satisfaction. The first variable concerns the impact of learning activities on participation.

Question 4: Learning Encouraged Participation (LearnAct). Did the activities engage the participant and encourage participation within the simulations? Subjects may deter from actively participating within simulations, which is the reason for which this factor was accommodated within the survey. A higher mean of 4.85 (Table 2, Figure 4) was expressed in accordance to encouraging the participation of the subject which can be shown to reflect the verification of the answers given pertaining to the effectiveness of the training. If subjects are more willing to participate, there is a stronger verification upon the accuracy of the survey.

Table 2

Question 4: Learning Activities Encouraged Participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	.5	.5	.5
	2	1	.1	.1	.6
	3	2	.1	.1	.7
	4	226	12.6	12.7	13.4
	5	1538	86.0	86.6	100.0
	Total	1776	99.3	100.0	
Missing	System	12	.7		
Total		1788	100.0		

LearnAct

Figure 4. The learning activities encouraged my participation.

With only 12 missing surveys, the mean of 4.85 supports the use and capability of such

learning mechanisms. The second variable addresses occasions to practice and reinforce

the training received.

Question 5: Opportunities to Practice (OppPract). Did the courses provide

opportunities to practice and reinforce what was taught? With a mean of 4.79 (Table 3,

Figure 5), the general consensus seems to concur that the course provided these

opportunities to reinforce what was learned.

Table 3

Question 5: Opportunities to Practice and Reinforce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	.6	.6	.6
	2	20	1.1	1.2	1.7
	3	12	.7	.7	2.4
	4	242	13.5	13.9	16.3
	5	1455	81.4	83.7	100.0
	Total	1739	97.3	100.0	
Missing	System	49	2.7		
Total		1788	100.0		

OppPract

Figure 5. The course provided opportunities to practice and reinforce what was taught.

Having the opportunity to carry out scenario-based training is central to the workshop, and a mean of 4.79 fortifies the point that learning exercises not only encourage real-world practice but also are highly constructive.

Job Performance

The content of the results taken were from sample taken from precollected data encompassing 1,788 participants subject to the trainings. Table 1 demonstrates an overview of the data collected in synthesizing the content material. The successive table and graphs demonstrate the various methodologies obtained through archival data collection to verify the efficiency in the training exercises.

Question 14: Training Will Be Useful in Performing Job. With respect to Question 14, *Training Will Be Useful in Performing Job*, analysis reveals that the frequency of affirmative answers—those affirming that the training was indeed useful— is well above the margin for speculation as there is a significant gap between those rating the material on a higher level and those rating the material on a lower end of the rating system (Table 4). This dissonance of 1,473 subjects affirming the highest rating and 221 of them marking the second highest degree shows that 85.8% of participants rated the training to be of the most efficient degree while only 12.9% held the notion of one rating lower. As can also be seen, the percentiles continuously lower given that .9% rated the training at 3 and only .4% rated the training at 1.

Table 4

Question 14: Training Will Be Useful in Performing Job

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	1	7	.4	.4	.4
	3	16	.9	.9	1.3
	4	221	12.4	12.9	14.2
	5	1473	82.4	85.8	100.0
	Total	1717	96.0	100.0	
Missing	System	71	4.0		
Total		1788	100.0		

Figure 6. Question 14: The training will be useful in performing my job.

Figure 6 graphically expresses unambiguous agreement that participants felt training will be useful in their job performance. Significantly, this variable received a mean of 4.84 which indicates that the training was of high value. Indeed, time will determine the real efficacy of the variable as participants begin putting their instruction to use. Presently, however, the preponderance of high scores certainly signifies a positive unanimity among respondents.

Question 16: Practical Exercises Simulated Tasks I Perform. Table 5 represents the opinion of those participants who partook in the simulations, as the goal within the survey was to assess the effectiveness of these simulations as these activities can be effective for some and much different to others, which predominantly affects training that bases its strategies on the application of these methods. Conducive to estimating the effectiveness of these simulations, the data presents a mean of 4.81 which reinforces the estimate and proves the ability of these activities to produce a tangible learning platform.

Table 5

Question 16: Practical Exercises Simulated Tasks I Perform

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	1	8	.4	.5	.5
	2	11	.6	.7	1.1
	3	15	.8	.9	2.0
	4	233	13.0	13.8	15.9
	5	1416	79.2	84.1	100.0
	Total	1683	94.1	100.0	
Missing	System	105	5.9		
Total		1788	100.0		

Figure 7. Question 16: The practical exercises were good stimulations of the tasks that I actually perform on my job.

Incorporating realistic scenarios was central to this training. Thus, when asked whether practical exercises reflected actual job duties, participants responded with a mean of 4.81. Simply put, the data presented in Figure 7 mirrors the effectiveness of the training exercises. While this variable had the highest number of missing evaluations (105), over 80% of respondents still imparted a perfect score of 5. The results in this graph confirm that this course's scenario-based training delivered a massive positive impact for the trainees.

Met Expectations

   Question 17: Course Met My Needs/Expectations. As shown in Table 6, with a

mean score of 4.80 and the fact that none of the participants' responses were missing

(validating a fully comprehensive assessment of the subject matter), it may be inferred

that the course has met the overall needs and expectations of the participants. This is

critical in establishing the connection between not only practical and theoretical

assessment, but also as the question is accumulative based on a number of different

critical factors, reflected in and conducive with the graphs in Appendix B pertaining to

the variables Understanding the Material (EasyUnd), Encouraging Participation

(LearnAct), Increasing Knowledge about the Topic (CrsKnow), Instructor's Performance

(InsMet), and Use in performance to Job (TrUseJob), the answer to Question 17 about

Course Expectations exemplifies the collective needs and expectations in all of these

questions. The overall pattern developed between these graphs reveals that there is wide

agreement in the productivity of these course's scenario-based trainings.

Table 6

Question 17: Course Met My Needs/Expectations

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	1	9	.5	.5	.5
	3	9	.5	.5	2.0
	4	302	16.9	16.9	15.9
	5	1468	82.1	82.1	100.0
	Total	1788	100.0	100.0	
Missing	System	0	0.0		
Total		1788	100.0		
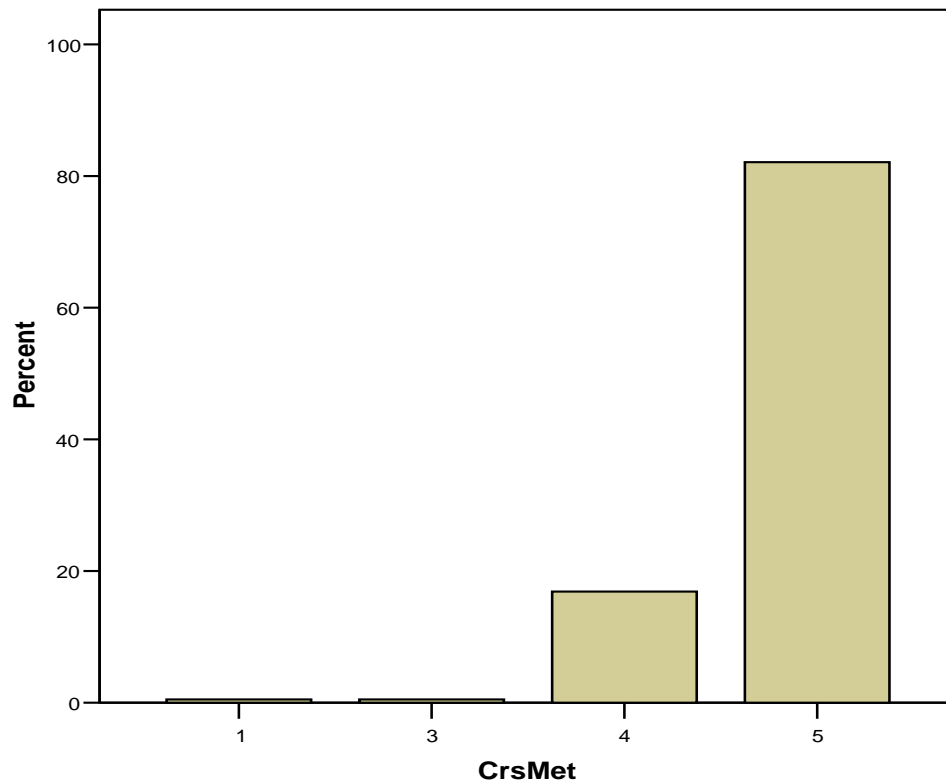
Figure 8. Question 17: The course overall met my needs and expectations.

With zero missing evaluations, Figure 8 graphically demonstrates that over 80% of the participants endorsed the course with a perfect score of 5 in terms of expectations met. This particular question reflects the overall satisfaction that trainees felt about the course. Since people's needs and expectations are often subjective, this question was designed to produce an overarching consensus. Consequently, it can be clearly seen that the overwhelming majority of participants expressed contentment. With a mean of 4.80, participants answered this question with one of the highest scores in the evaluation.

One of the most important implications of scenario-based training can be seen in two significant variables: Practical Exercises Simulated Tasks I Perform, and Training Will Be Useful in Performing Job. These two variables are inextricably linked since both possess the same rudimentary basis and objective: improving real-world deception detection and information elicitation through scenario-based training. The former variable reinforces the latter and, according to survey results, both received a mean of over 4.8. These variables are significant because the training was precisely designed to achieve greater job performance in real-world situations. By simulating authentic tasks in scenario-based training, participants could relate to and refine their skills to improve job performance. This relationship corroborates that such training is useful due to exercises that are similar to tasks performed on the real job. Precisely because their mean results were highly favorable, the variables suggest that participants thought scenario-based approaches were taught well.

The implications of empirical outcomes also concern the original research question. That is, how effective is scenario-based training in improving adult deception detection and information elicitation? While the numbers indicate that scenario-based training enhances one's ability to detect deception, a nuanced approach would be more beneficial. The mean results of the survey questions, presented by order of means in Table 7 are measuring devices intended to answer the research question at hand. However, it would be reductive to immediately assume the data as concrete proof. Rather, one should carefully examine the patterns and idiosyncrasies in the results to identify uniformity within the responses. Indeed, dissecting a single variable and

analyzing its mean may not fully convey the effectiveness of the training as a whole. On the contrary, since the variables are largely interdependent, one can clearly see a harmony instead of variation in the survey outcomes: 18 of the 19 variables have a mean above 4.0. Thus, it is this very consistency which suggests that scenario-based training was helpful in improving deception detection and information elicitation.

Ranking by Mean

To understand any discrepancies visible in the evaluations, the highs and lows of data will be examined. Two of the highest results, apparent in Table 7, roughly pertain to the same variable, namely the instructor.

Table 7

Frequency Statistics: All Variables Sorted by Mean Descending

Variable	Variable Code	N Valid	Missing	Mean
Instructor Demonstrated Thorough Knowledge	InsKnow	1786	2	4.92
Instructor Professional	InsProf	1782	6	4.91
Instructor Prepared	InsPrep	1788	0	4.90
Instructor Free of Bias and Prejudices	InsUnbias	1788	0	4.89
Instructors' Responses to Questions Clear	InsClear	1787	1	4.86
Instructor's Performance Met My Expectations	InsMet	1786	2	4.86
Learning Activities Encouraged Participation	LearnAct	1776	12	4.85
Training Increased My Knowledge	CrsKnow	1754	34	4.84
Training Will Be Useful in Performing Job	TrUseJob	1717	71	4.84
Objectives Met	Objective	1787	1	4.82
Practical Exercises Simulated Tasks I Perform	ExSimul	1683	105	4.81
Course Met My Needs/Expectations	CrsMet	1788	0	4.80
Opportunities to Practice and Reinforce	OppPract	1739	49	4.79
Training Facilities Conducive	FaciLrn	1778	10	4.79
Training Facilities Met My Needs/Expectations	FacMet	1785	3	4.78
Materials Easy to Understand	EasyUnd	1786	2	4.72
Learning Aids Helpful	LearnAid	1785	3	4.72
Received Training When Needed	TrNeeded	1711	77	4.18
Length of Course Sufficient	Length	1747	41	3.32

When asked how professional the instructor was, participant answers resulted in a mean of 4.91 (Table 8, Figure 9).

Table 8

Question 12: Instructor Professional

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	1	.1	.1	.5
	4	133	7.4	7.5	8.0
	5	1640	91.7	92.0	100.0
	Total	1782	99.7	100.0	
Missing	System	6	.3		
Total		1788	100.0		

InsProf

Figure 9. The instructor(s) conducted the course in a professional manner.

Regarding the instructor's knowledge of the subject matter, the mean was 4.92

(Table 9, Figure 10).

Table 9

Question 9: Instructor Demonstrated Thorough Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	4	114	6.4	6.4	6.8
	5	1664	93.1	93.2	100.0
	Total	1786	99.9	100.0	
Missing	System	2	.1		
Total		1788	100.0		

InsKnow

Figure 10. The instructor(s) demonstrated a thorough knowledge of the subject matter.

The instructor-related answers were among the highs of the evaluations and are indicative of how effective the training execution was. These two scores support that the instructors were proficient in their knowledge while facilitating scenario-based training. However, the instructor's knowledge and professional manner is only one important part of the training. It is just as essential that participants actually acquire and understand such knowledge.

When asked if training will be useful in job performance, results had a mean score of 4.84. Regarding expectations of the instructor's knowledge, the answers had a mean of 4.86. These high results suggest that instructors were not only competent in their duties but also carried out productive training.

The notable lows amid the survey results address the sufficiency of the course's length (mean = 3.32), and whether the participants received the training when needed (mean = 4.18). While both figures are above satisfactory, their comparatively inferior standing can be understood in a few ways.

The length of the course was designed to maximize training in a fixed amount of time. It may be likely that participants felt the duration was too short. However, scenario-based training takes time. While some teaching styles often attempt to provide quick solutions, scenario-based training is a process. It may be thought of something that is refined over time and constantly modified. It is fluid in nature and gradual in application.

This score suggests that scenario-based training should not be layered on after most job training is complete. Instead, it should be carried out early and then consistently reinforced thereafter.

Low survey results should be examined in the context of the respective variable(s). For instance, as Question 6, 'length of course sufficient' reflects, despite insufficiency in the course length (mean = 3.32), many participants (1,787) felt that objectives were still met (mean = 4.82) (Table 10, Figure 11).

Table 10

Question 6: Length of Course Sufficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	179	10.0	10.2	10.2
	2	495	27.7	28.3	38.6
	3	158	8.8	9.0	47.6
	4	416	23.3	23.8	71.4
	5	499	27.9	28.6	100.0
	Total	1747	97.7	100.0	
Missing	System	41	2.3		
Total		1788	100.0		

Length

Figure 11. The course length was sufficient to deliver the content.

And Question 15 *Received Training When Needed* yielded a mean of 4.18 (Table

11, Figure 12).

Table 11

Question 15: Received Training When Needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	3.4	3.5	3.5
	2	184	10.3	10.8	14.3
	3	86	4.8	5.0	19.3
	4	433	24.2	25.3	44.6
	5	948	53.0	55.4	100.0
	Total	1711	95.7	100.0	
Missing	System	77	4.3		
Total		1788	100.0		

TrNeeded

Figure 12. I received the training when I needed it.

Limitations

The notable restrictions that prevented greater retrospective analysis of scenario-based training are twofold. The first was a practical issue, namely that the security environment precluded experimental manipulation. In other words, the U.S. government did not allow access to the details or results of previous training. Had there been permission to retrieve prior archival data, the current study could have carried out a comparative analysis of a control group vs. the group that underwent scenario-based

training. However, since older data could not be obtained, the current study was predicated on evaluations that participants completed.

The second limitation was the inability to examine the impact of demographic factors such as gender, age, and race. Having background knowledge of the participants could have helped improve the design of the training program. Certain exercises and course content materials could have been shaped to fit participant needs. The appropriate demographic information would also allow for greater study that may improve future workshops.

Future studies of similar content will find it beneficial to access previous data and obtain demographic information to facilitate further academic inquiry but also contribute to a more comprehensive framework of research.

Summary of Results

This chapter delineated and analyzed the quantitative as well as qualitative factors of the training conducted, as reflected in the responses to the survey. To summarize, it should first be noted that the context development consisted of surveys completed by 1,788 participants. In addition, the 19 variables assessed (as seen in Table 1) ranged from instructor knowledge and relevancy of training on job performance to course expectations and the achievement of objectives. With 18 of 19 variables rated above 4.0, participants conveyed satisfaction with the premise that this course's scenario-based training reached the desired and intended result.

Further, the outcomes confirm the highs and lows of certain highlighted variables. Most notably, the highest ratings (both pertaining to the instructors) correspond to other

variables that addressed overall efficacy and usefulness of the training. The implications discussed earlier suggest that the course's learning activities not only contributed to overall participation, but also augmented the knowledge base of deception detection.

The noticeable uniformity of two variables (Training Was Useful (TrUseJob) and Exercises Were Practical Simulations (ExSimul)), reinforces the central aim that scenario-based training can be effective in enhancing adult learning of deception detection and information elicitation.

To recall the main features of this chapter, five essential points should be remembered. First, the evaluations reveal positive reactions to scenario-based training, as best seen in Table 7. Next, scenario-based training works well for job preparation as evidenced in the perceptions of utility for application to tasks they perform as part of their employment. Third, it is useful as a learning activity among other training options, as indicated by the high scores for learning aids and activities. Fourth, scenario-based training takes time; particularly in the stages of learning, applying, refining, and consistently executing. Lastly, scenario-based training should occur early in one's career. Due to its versatility, placing scenario-based training at the foundation of learning and performance benefits practitioners toward long-term goals.

Finally, some limitations of the research provide further context for the training conducted. For example, the security environment precluded experimental manipulation because the U.S. Government retained access to previous archival data. Despite such restrictions, however, the data still seems to suggest that scenario-based training was effective in benefiting adults learning deception detection skills. Taking into account the

survey design, variable assessment, and data implications, we now shift to curriculum

strategies that maximize the scenario-based approach.

CHAPTER 4: CURRICULUM STRATEGIES

Deception Detection Curricula Using Scenario-Based Training

Scenarios were first used formally after World War II as a method for war game analysis. Their value was quickly recognized, and the use of scenarios for a number of other strategic planning applications began to grow. Today, scenario development is used in a wide variety of contexts, ranging from political decision-making to business planning, and from global environment assessments to local community management (Alcamo, 2001).

When Should Scenario-Based Training Be Considered?

It is an age-old truth that preparation enhances performance. Diverse as modern occupations may be, job training invariably seeks to create mental and physical readiness for the real experience. For this purpose, I argue that scenario-based training should always be considered simply because practicing or rehearsing any event before its actual occurrence can prepare one for extreme situations. This applies to complex or menial tasks.

Consider the following case of serving food in a cafeteria. Suppose someone takes 50 people and sends them overseas to serve 200 military personnel in a cafeteria under a tent. Although those people have never done it before, serving food is certainly not a hard science or complicated task. However, if one has never served before and is sent overseas

to a desert where it is 100 degrees Fahrenheit under a tent, and 200 personnel are in line with only one hour to eat, the task may seem impossible.

Using the scenario-based approach, training 50 servers would require teaching them how to set up a tent, prepare the food, organize utensils, and then serve that food in less than two hours. The trainees would first see how it is done and then conduct an exercise with role players who are brought in to act as the military personnel. This training method is the appropriate preparation for trainees before they enter an actual experience.

The example above describes the relevance of scenario-based training for serving people in a cafeteria. The scenario-based training paradigm can thus be applied to nearly all activities and professions. This may include hunting, waste management, intelligence operations, and much more.

Once scenario-based training is considered, there are further elements that one must also be cognizant of. These mainly consist of context, culture, cost, and time.

Knowing the context can help us understand the circumstances that form the setting of an event, statement, or idea. With respect to law enforcement, defense, or intelligence gathering, the complexities of geography are often at the forefront. For instance, operations are carried out at the local, regional, and international levels. A local bank robbery is usually addressed by authorities of that particular area. But a drug cartel or terrorist group that works by moving across border lines would require the attention of numerous law enforcement bodies. Inter-agency collaboration is central to dealing with issues that transcend borders and geographical regions. As cases expand, more players

get involved. Defining and working within a specific context is helpful in navigating the webs and networks of complexity that could potentially derail an agency's objectives. While establishing the context is a primary task, we must also keep in mind how it functions within different cultures.

Culture, no matter how defined, broadly refers to a complex system of learned beliefs, values, language, religion, art, morals, law, education, and customs. It is constantly changing and provides individual members of society a sense of identity, and determines how to perceive the world around them. If one wishes to understand and communicate effectively with people of different cultures, it is important to understand how culture affects communication. It may be useful to think of cultures as high-context or low-context. These terms, coined by the anthropologist Edward T. Hall, refer to a culture's tendency to use high-context messages over low-context messages in terms of communication. Japanese, Chinese, and Middle Eastern cultures are high-context whereas American, Scandinavian, and Dutch are low-context. Simply put, low-context cultures are often task-oriented and high-context cultures are mostly relationship-oriented. The former emphasize career, love life, and health while the latter stress the importance of family, spirituality, and communication. As an instructor or participant of scenario-based training, understanding such nuances of culture propel one's ability to act decisively in situations around the world.

Another force that shapes scenario-based training is cost. To keep up with the previously discussed components of context and culture, determining the cost of course materials, equipment, staff, and space can prove to be a difficult task. In my case, the

total cost was a significant amount. Since the workshop trained government personnel on addressing international terrorism, numerous role players and subject-matter experts were consulted. On the high end, running a program that requires a specialized facility with interview rooms, audio and video capabilities, one instructor, four subject-matter experts, and six coaches managing the training process would roughly require a multi-million dollar investment. The evident advantage of this is that an outside influence would offer the course more dynamic and first-hand knowledge. On the low end, utilizing individuals in the class as role players instead of bringing in subject-matter experts would entail a far lower coast. The disadvantage of only using students in the class as role-players is that there is no exposure to outside influence, thought, and experience. Either way, scenario-based training occurs in both cases because the fundamentals and central principles are in place.

Lastly, instructors and participants must be cognizant of time. Data from my scenario-based training workshop reveal that participants felt the training was not early enough in their careers. Participants also felt the length of the course was not as sufficient as they hoped for (mean: 3.32 out of 5). Those who might pursue scenario-based training can thus find these rankings helpful in determining the length of the workshop and how early it should be incorporated in one's career. To stretch scenario-based training into a longer workshop, it seems best to add more exercises that cover previously unexamined cases and scenarios. Increasing difficulty levels also provides a challenging opportunity for participants to enhance their skills. Aside from scenario exercises, the instructor may also choose to lengthen the feedback phase of the training. An increased dialogue

covering the peaks and pitfalls of the course would provide greater insight for improvements and novel ideas for practice.

How Do You Develop Scenarios?

After reviewing the *9/11 Commission Report* (National Commission, 2004), I was tasked to develop a Counter-Terrorism Response (CTR) protocol and training to address questioning and detaining possible terrorist subjects. The training course I developed, Detecting Deception and Eliciting Responses (DDER), is an advanced training course in noncoercive interviewing techniques and includes a day of classroom lectures on such topics as Behavioral Analysis and Interviewing Strategies, followed by two days of specific "role-playing" exercises. The primary focus of the DDER course is to enhance questioning skills and to build upon the officers' arsenal of interviewing techniques while confronting potential terrorists. The process to develop and analyze the DDER course scenarios involved similar steps to the ones used below, although emphasis on any particular step may vary.

To better understand its composition, Figure 13 shows what a typical scenario looks like. As one can see, the form lists a step-by-step method of preparing and executing a sample scenario exercise.

1. Objective	• The purpose of this exercise is to provide each participant with an opportunity to practice the skills presented during the classroom training in a series of simulations.
2. Structure	• Working as a CTR team, course participants will have two opportunities to interview each traveler. Each interview will last no more than 20 minutes. • Prior to the first interview, the lead instructor will be presented with information that the Analytical Unit has gathered and the results of the primary interview. At that time, a summary of document analysis (e.g., passport information, CBP declaration, etc.) will be available. • Following each interview, the primary interviewer and coach will meet to discuss the interview. At the end of each day, teams should be prepared to present the information they derived from each traveler and their conclusions. Teams will select a spokesperson to present a summary of each scenario.
3. Ground Rules	• Each team member must serve in the roles of primary and secondary interviewer at <u>least once</u> during each day. When not serving as a primary or secondary interviewer, other team members serve as observers. Observers should participate in the formulation of the interview strategy and research activities. • Team members should assume that the travelers' documents are genuine and that no one is an imposter. Information from the travelers' passports, CBP declarations, transportation tickets, car registrations, etc., is presented in summary form. These items will not be available for the teams to examine directly. • Team members should be encouraged to examine the travelers' items that are in the room (briefcase, pockets, wallet, etc.). **These items may contain valuable information.** Teams should assume that a patdown for weapons has already occurred. In no cases will there be a need for a personal search beyond an immediate patdown. • In between the first and second 20-minute interviews, you should remain with the team. Team members will have time to ask the Analytical Unit to run systems queries, conduct Internet research, or make telephone calls including to the NTC. • Although the setting, documents, and personal items are obviously for training purposes, team members should use all of their analytical and interviewing skills to elicit information. Encourage the teams to treat the interview as if they were encountering a potential terrorist at a port of entry. The pocket trash and other items should be used to formulate their interview strategy. **Emphasize that if there is hostile intent, they must derive it from their elicitation techniques!** • During the 20-minute interview, a primary interviewer may call for a break to discuss the interview strategy with team members outside the interview room.
4. Preparation Steps	• Acquaint yourself with the scenarios and the information to be elicited during the interviews. • Make sure the interview rooms are set up. If possible, have a clock in each room to help the interviewer plan his or her time. Check that the clocks are set the same. • Prepare video equipment and label tapes with the participant names. Locate an area for the "interviewer" and coach to discuss the interview. • Set up the "Analytical Unit" area. • Divide the participants into six teams, with four participants on each team. Assign one coach to each team. The coach will stay with the team throughout the day. • Make sure each coach has six feedback worksheets to assess the primary interviewers.

5. Conducting the Exercises	• **Start the interviews on time and end the interviews on time.**
	• As the team interviews the traveler, fill out the feedback worksheet.
	• At the end of each interview, meet with the lead interviewer. Give the interviewer a brief break and complete the feedback worksheet. Conduct the feedback sessions using the following steps:
	   o FIRST, ask the interviewer to comment on the strengths of the session.
	   o NEXT, ask the interviewer what he or she would have done differently.
	   o After the self-assessment process, review the completed feedback worksheet and provide feedback using specific examples.

Figure 13. Example of a scenario development form.

Clarifying or understanding the purpose or the concept of the scenario exercise is paramount. Carefully planning and thinking in the early stages of the exercise will significantly improve the quality of any scenario activity. Some of the most important questions to ask right away are why you are doing the exercise, who should be involved, and what key elements are required to structure the process. In some cases, the steps described in this phase have been done at the start of a scenario exercise, but in a fairly informal and ad hoc manner. In other cases, they are only really treated explicitly once the process is well underway and the scenarios are already (partially) developed. Thus what is presented in this phase should not be seen as set in stone for the whole length of the exercise.

In establishing the nature and scope of the scenarios, the outputs from this step should be a clear overview of and plan for the scenario process. The specific details of the plan will depend on the type of scenarios chosen and other factors, e.g. available resources. This includes such factors as time, balance between narrative and quantitative elements, nature of policy analysis, and available resources for the exercise.

Identifying stakeholders and selecting participants is as important as establishing the nature and scope of the scenarios. The scenario-building process must benefit from the input of a cross-section of society to increase the likelihood that the scenarios have buy-in from the appropriate actors. This also improves the usefulness of the scenarios to the end user.

The scenarios for the role-play exercises in the DDER course were created after considerable discussions with the parent organizations receiving the training to

understand the day-to-day responsibilities of the officers receiving the training. First, I was allowed to observe firsthand several ports of entry into the United States to include land, air, and seaport. Second, I was given access to the targeting centers where information is collected, collaborated, and disseminated to various law enforcement and intelligence organizations throughout the U.S. Government. It was through those experiences I was able to create realistic scenarios in the exercises presented to students.

As noted earlier, not all of these steps are required in every scenario process. Some scenario exercises may forgo the quantitative aspects, while others may have little or no narrative element.

How Do You Actually Use Scenario-Based Training (SBT)?

Models can be used in numerous ways and in equally as many tones, intensities, and difficulties. I will presently discuss four ways that maximize the value of scenario-based training. The first is with respect to incorporating it early in one's career. Understanding the nature of scenarios and experience-driven practice benefits career development by exposing one to a diverse array of cases that may occur sometime within one's career. Learning and incorporating it at the early stages of work will improve job performance over time because with every new experience, one may consult previous scenario-based training to better prepare for situations to come.

Another way to use SBT correctly is to avoid scripting. Indeed, the spontaneity of experience is often what enables people to think quickly and act under the appropriate circumstances. If SBT is scripted, then officers are merely replicating situations instead of generating new and challenging ones. The notion of content in context (environment),

covered earlier in the literature review, is crucial here. When Blair et al. (2010) carried out their case studies using college students, they utilized stimulus material, bogus training controls, and no training controls. Without any formal scripts, subjects had to rely on their awareness and inclination to detect deception. The high accuracy results suggest that more than merely scripting a scenario, the necessity of a situated environment and context is of greater importance. Further, two of the four stages in David Kolb's experiential learning cycle support the idea that active experimentation contributes to enhanced learning. Concrete experience (the first stage) and testing in new situations (the fourth stage) encourage authentic experiences. Ultimately, literature on deception detection indicates that the power of the situation supersedes that of scripting.

Using SBT also entails the development of coaches and role-players. These are agents that have background experience and often expertise in the relevant scenario. Their purpose is twofold because they act as guiding forces yet solid obstacles toward participants in the training process. The performance of trainees is what determines the outcome of scenarios. But the trainees themselves are only as productive as their instruction dictates. Coaches must thus be developed and accommodated to varying scenarios.

A final way to actually use SBT is through student evaluations. Feedback reflects the highlights, and oftentimes the absurdities within many programs. It must therefore be leveraged to inform future training and lecture sessions. Evaluations are unique components of SBT in that they operate as the first and last steps of training. In other words, they are both reflective and prescriptive. Studying evaluations, developing

coaches, avoiding scripting, and early career implementation of SBT are key elements that formulate a holistic view. The student provides feedback that will allow the instructor to analyze the strengths and weaknesses of the course content and also the performance of the instructor. In turn, the instructor provides real-time feedback to the students during the scenario-based training exercises. This is important because the instructor brings expertise and experiences to the course. Students benefit from this insight as they then attempt to mold their skills based on the instructor's constructive remarks.

These four ingredients of SBT are interrelated and may occur concurrently. For instance, during days two and three of the DDER course, students are given specific role-playing exercises. During these exercises, there are four role players from various parts of the Middle East and Near Eastern Asia. Each has a different story to tell and each responds to the officers in a fashion befitting the treatment they receive. Each team is exposed to each of the four role players over the course of the two days. At the end of the second day, the role players, team coaches, and instructors provide feedback to the group as a whole.

Through experience, I have found that by combining the first day of classroom training with the second day follow-up of role-playing, the officers have the opportunity to practice newly provided skills and techniques. This hands-on activity serves to reinforce the learning experience of the first day. To conceptualize this notion of reinforced learning, we can revisit the work of Jarvis and Kolb from Chapter 2. For Jarvis, experience acts as the channel for a person's transformation. Frequent 'episodes',

of what he calls socially constructed experiences, transform a person's thoughts, actions, and emotions. Jarvis places particular attention on social contexts to examine learning as an interactive phenomenon instead of an isolated, internal process. This is especially relevant to scenario-based training because creating a state of dynamism and uneasiness triggers learning. Actively provoking the faculties of thought, action, and emotion thus perpetuates the continuous nature of the learning cycle.

Similarly, David Kolb posits that knowledge is created through the transformation of experience (1984). His cyclical model of experiential learning is depicted in four stages: concrete experience, observation and reflection, forming abstract concepts, and testing in new situations. The steps in scenario-based training complement Kolb's stages as participants observe and absorb ideas in the classroom, then experience them through role-playing and scenario exercises, and finally reflect on their performance in a dialogue-driven feedback session. In essence, the first day of classroom training enriches the second day of role-playing as participants can tailor their classroom education to real-world application.

What Constitutes a Realistic Scenario?

Several factors contribute to what can be considered a realistic scenario. But before examining its fundamental qualities, it is important to ask what a scenario is. No matter how defined, a scenario is something a person can experience. A realistic scenario, therefore, implies that such an experience must be authentic in practice. And since it is impossible to repeat the precise series of events or the actual environment surrounding any situation, realistic scenarios must rely on reenactments. In essence, the central task

involves taking case facts and reliving the experience(s). Doing this successfully requires a meticulous analysis of cases and precedents that the instructor endeavors to recreate.

Using role players can be an effective method of bringing precedents to life. The advantage of utilizing subject-matter experts is that their experience acts as a canvas for the students to paint their own understanding of the case. While it will always remain the case that participants will have disparate interpretations, the instructor can place certain boundaries of comprehension. Whether it may include breaking cobwebs of misconception, forging two or more unrelated ideas, or simply impregnating new notions, the instructor plays a vital role of influencing the student's outlook. Doing so via the scenario approach is achievable, but executing it realistically is the challenge.

Since this exegesis on realistic scenario-based training is aimed toward military, intelligence, and law enforcement personnel, many will question its effectiveness. One might wonder: How is it possible to organically reenact a national security crisis like 9/11 for training purposes? Even though it is unfeasible to replicate the DNA of any crisis, it is possible to emulate factors such as atmosphere, urgency, and protocol. To create the right atmosphere, the instructor can set the tone and mood of the scenario by deploying physical barriers, limited resources, and restricted means of connectivity between participants. Urgency can perhaps be best represented through time constraints. And protocol would require following a series of procedures designed specifically to manage moments of crisis.

The anatomy of a realistic scenario consists of various interdependent parts. However, the three main components remain:

- Case facts and precedents

- Reenacting particular incidents

- Using role players and subject-matter experts.

Taken in concert with ideas of experiential learning and a nuanced scenario design, these steps can assist with realistic training. And similar to all practices, they are polished over time and trial.

How Do You Orient Learners to the Scenario Experience?

First the learner has to be motivated. Motivation is what makes a human being act to achieve a goal. There are two types of motivation: intrinsic, in which motivation emerges from the desire to learn, to master a task, or to prove oneself; and extrinsic, in which motivation emerges from the rewards gained when completing a task in the right way. At first, most learners will be extrinsically motivated. They take the training because it is mandatory, especially when the training is of the compliance nature.

However, in Csikszentmihalyi and Nakamura's (2002) flow theory, intrinsic motivation occurs when there is a balance between a learner's present skills and the challenges he or she faces. As an example, a learner possessing low problem-solving skills will only be able to solve problems with a low challenge. Thus, solving problems will increase the learner's skills.

To keep the learner motivated, the challenge has to increase as the learner's skills develop. If the learner's skills are higher than needed for the challenge, the learner will get bored quickly, or get frustrated if the challenge is larger than the current skills can meet. The area of perfect balance between skills and challenge is called the flow channel,

which Csikszentmihalyi and Nakamura's (2002) define as the state in which a person is fully immersed in an activity. Csikszentmihalyi and Nakamura call the state of flow a state of maximal intrinsic motivation. So, when a person is presented with a problem that resides within the flow channel, he or she will be intrinsically motivated to solve that problem. For instance, Figure 14 displays a briefing that could potentially be used.

Scenario #4A: Briefing

- **Type of Referral:** Airport – TIPOFF
- **Name:** [Ask Your Coach]
- **Citizenship:** Albanian
- **Nationality:** [Ask Your Coach]
- **Documents Presented:** Valid I-551
- **Port:** Boston, MA
- **Reasons for Referral:** TIPOFF
    - NTC: NTC has requested that you verify demographic information about the traveler. NTC will call back with instructions from the Terrorist Watch Center. In the meantime, you should gather as much information as you can.
    - Luggage Examination Results: Nothing unusual found in the luggage examination. The SUBJECT's purse and briefcase have

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Figure 14. A potential briefing.

While motivation is one important facet of learning, orienting learners can also be done through creative curriculum design. Placing experience at the epicenter of instruction, we can turn back to David Kolb's experiential learning cycle (Figure 3). Kolb argues that "knowledge is created through the transformation of experience" (1984). The four stages which capture this idea include concrete experiences, observation and reflection, forming abstract concepts, and testing in new situations.

From the standpoint of an instructor, these stages may be assorted and mixed to yield different outcomes. Kolb's learning cycle provides two key benefits. First, related

to the aforementioned importance of motivation, scenarios can be varied to keep veterans interested. Put differently, flexibility reduces disinterest because exercises are more dynamic and unpredictable. Second, scenarios can be created with progressive challenges. "Ramping up" the difficulty level will keep learners interested while improving their skills. Scenarios should be introduced to students with relative ease and get progressively harder. As an example, cases may start off at the local level where the number of role players and complexities are fairly low. They would then progress to a regional focus where more than one state enters the picture. Finally, the difficulty of a case can be measured at the transnational level where factors like culture, security, trade, and diplomacy complicate the exercise.

Not all learning cycles encapsulate the same elements. Hersey and Blanchard's (1977) model demonstrates four types of learners. As shown in Figure 15, different types of learners require varied levels of support in addition to guidance and feedback.

The Learning Cycle
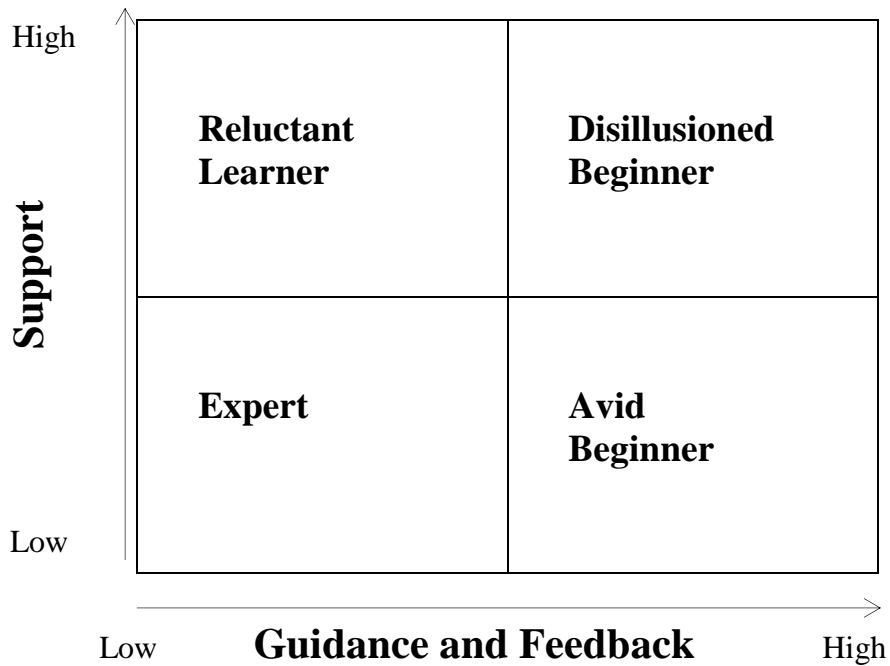
Figure 15. Hersey and Blanchard's model of learning cycles.

This model presents the relationship between a learner's skill and his or her needs. For the disillusioned and avid beginners it is paramount that they receive clear instructions, ample feedback, emotional support, technical guidance, and proper coaching. And while experts need little to no support, building confidence is most important for reluctant learners. The learning cycles of Kolb, and Hersey and Blanchard, are useful paradigms for accommodating learners to experiential scenarios. Instructors can apply them to improve curriculum, assist students, and experiment with experience-oriented teaching styles. The reluctant learner is someone who, for whatever reason, is not actively participating. To successfully reach out to reluctant learners, one must

incorporate in their curriculum certain activities or exercises that will allow the reluctant learner to feel safe or increase their confidence. For example, an exercise could be that if there is a team activity, creating a comfortable speaking or writing phase, the reluctant learner could begin as the note taker or content recorder. As positive feedback is provided, the goal would be to increase the self-confidence of that reluctant learner. Eventually, they can speak in front of class or lead the team in an exercise.

In sum, orienting learners to the scenario experience may be achieved through motivation (intrinsic and extrinsic), creative curriculum design, progressive challenges, support (emotional and technical), and consistent feedback. Now we will turn to methods that debrief learners from training exercises.

How Do You Debrief Learners From the Scenario Experience?

Any review upon the completion of an exercise seeks to rank or grade the outcome. Debriefing learners can take many forms, which may include written evaluations, oral recommendations, reflection assignments, constructive criticisms, and discussion among participants. Many agree that learners should be debriefed as soon as possible following the simulation exercise. Debriefing students while the scenario experience and information are still retained helps in propelling the learning momentum.

The traditional debriefing methodology relies on three fundamental questions:

- What happened?

- What was done well?

- What could have been done better?

While such questions are essential in deconstructing the scenario, they seem to have become platitudes that learners have encountered all too frequently. Debriefing should not be considered an ancillary event after the fact. Nor should it be seen as detached from the scenario that it attempts to dissect. Instead, a debriefing must be recognized as an important extension of the scenario—a continuous learning experience that is as vital as the exercise. Indeed, cross-examining the components of a scenario can either foment a solid understanding of what occurred or it can conversely work to the scenario's detriment. In addition to asking the right questions, it is prudent to be experimental. As an example, carrying out a Socratic seminar or a two-way exchange between participants can be highly instrumental in reflecting on the scenario experience. When specific questions are asked (What were your impressions of the scenario exercise? What would you do differently?), the responses tend to be general because the very purpose of questioning is to solicit distinct information. Therefore, debriefing should rely on the subject's experiences of the scenario and not the assumed experiences that the instructor seeks to understand. It is for this reason that learners should discuss, among themselves and the instructor, the formative parts of the scenario exercise. This debriefing tool that is based on reflection and discourse is also useful in exploring the various strengths and weaknesses of the scenario experience.

Put simply, debriefing learners from the scenario experience should be done in two equally weighted ways. The first is through questions. While they are normally designed to deconstruct the layers of the scenario, they can also solicit responses to improve the exercise. Some questions may elicit numerical scores. Others are meant for

textual responses. The second method is active discussion. A forum of discourse is a productive device for reflection because criticisms and flaws can be thoroughly explored.

What Kind of Feedback Is Most Useful for Learners in Scenario-Based Training?

Learners tend to be highly diverse and idiosyncratic in their understanding of concepts. To recall Chapter 2, David Kolb highlighted four learning styles: assimilators, convergers, accommodators, and divergers. Although it is arduous to characterize something as complex as learning, Kolb's ideas provide an appropriate platform to study the mechanisms of knowledge consumption. While some students prefer logical theories (assimilators), others are more comfortable with practical application of concepts (convergers). And while some favor hands-on experience (accommodators), others choose to learn by absorbing a wide range of information (divergers). Taking into account just a few of myriad learning styles, it is the instructor's task to manufacture useful feedback methods that are holistic in nature yet precise in application.

According to the Association for Supervision and Curriculum Development (ASCD), feedback strategies can be constructed in a few dimensions: time, amount, mode, and audience (Brookhart, 2008). The timing of feedback can be measured as immediate or delayed. It is suggested that immediate feedback is more effective since students are still fairly mindful of the topic covered.

Next, ASCD asserts that the hardest decision is in regards to the *amount* of feedback given. As the instructor, the "natural inclination is to want to 'fix' everything you see" (Brookhart, 2008). However, an abundance of feedback may cause confusion or a sense that the work is being done for the student instead of by the student. Thus, the

right amount of feedback ensures the concept is understood but also that the student has space to think critically via active questioning and reflection.

The third strategy refers to mode. That is, what is the best and most appropriate way to communicate feedback? Common modes include written comments, oral feedback, and demonstrations of how to do something. The final strategy proposed by ASCD deals with the audience that is addressed. It is not recommended to use the same comments for all students. It is also equally discouraged to supply individual feedback because that consumes too much time. Rather, it is most beneficial to provide individual prescriptions to students but with consideration to time so that everybody is equally covered. As will be shown in Figure 16, the checklist method seems to meet ASCD's feedback criteria of providing individual reviews while debriefing groups. Checklists are neither parochial nor overly generalized. It seems the key idea driving ASCD's rationale for feedback is locating the best balance to deliver student critiques with consideration to time.

ASCD's focus on time, amount, mode, and audience (Brookhart, 2008) provides a proper apparatus whereby an instructor can disseminate feedback. In addition to these four variables, it is also significant that the feedback be concise, constructive, and delivered with the right choice of words. Making the responses concise is helpful in eliminating superfluous thoughts and abstractions. Designing comments as constructive can benefit the student's individual area of need, and word choice is essential in this process. The positives should be mentioned briefly but in a manner that acknowledges

and encourages the student's effort. It is more important to provide constructive criticism in a fashion that motivates the student to improve.

Observing any improvement in performance, or the opposite, will ultimately define the feedback's success. Similarly, if a student becomes motivated and values constructive criticism, that can be a positive indication of the comments provided by the instructor.

One feedback method that is often used is a checklist. During the training, I assigned six teams of four individuals. Each team was also assigned a coach. Every student was videotaped and the small groups were given feedback by role-players and coaches. The following checklist was the device used to assimilate 10 aspects regarding interviewer competencies. It meets ASCD's feedback criteria because the checklist was not narrowly designed for every student. Rather, it demonstrates an individual's proficiency in the main aspects of training, as seen in Figure 16.

Feedback Checklist

Primary Interviewer Competencies	Demonstrated?		Not Applicable
	Yes	No	
▪ Introduces self and secondary officer.	☐	☐	☐
▪ Treats the traveler with respect and establishes rapport.	☐	☐	☐
▪ Takes into account cultural considerations.	☐	☐	☐
▪ Establishes an interviewing strategy/plan based on targeting information and information elicited.	☐	☐	☐
▪ Uses open-ended questions to elicit information.	☐	☐	☐
▪ Uses presumptive questions to elicit information.	☐	☐	☐
▪ Identifies and uses themes to elicit information.	☐	☐	☐
▪ Recognizes and uses challenges to maintain control of the interview while keeping rapport.	☐	☐	☐
▪ Recognizes potential countermeasures.	☐	☐	☐
▪ Elicits information associated with the traveler's "hostile intent".	☐	☐	☐

Figure 16. Feedback checklist.

As an example, in the training workshop students were videotaped during all scenario exercises between role players and students. After the completion of each exercise, both the instructor and the role players provided feedback. The students were aware that they would be videotaped for learning purposes. Working as a team, course participants had three opportunities to interview the role player. Each interview would last no more than 20 minutes. Prior to the first interview, the lead instructor would present background information to the students. First, the coaches would provide students

a scenario. Next, they would prepare for the exercise. The exercise would commence for

20 minutes while students were videotaped. Following that, there was a 20-minute review

session that also allowed students to strategize for the next exercise. After the second 20-

minute exercise, another review session would take place and students would then finally

prepare for the final 10-minute exercise.

Once the exercises finished, students viewed the videotapes to reflect on and

critique their performance. Allowing students to see themselves in action provided a

further dimension of self-assessment. This allowed students to improve their body

language, gestures, and motions for future training exercises. They would repeat those

steps for the next exercise. Videos were a frequent learning aid throughout the course and

survey evaluations rated them at a mean of 4.72, as seen in Table 7. The portion

accompanying these aids was the video review feedback, the key learning activity in the

course. Participants indicated that learning activities encouraged participation with a

mean result of 4.85, also in Table 7. In short, videos can be instructive learning tools,

particularly in scenario-based training as it provides students with another means to

polish their skillsets.

How Do You Scaffold Knowledge and Tie it to Experience?

Scaffolding knowledge is proving that someone has learned something. So, if

learners can apply it, they have learned it. It is learning by doing. Before entering a

scenario-based training event, a student needs basic knowledge of the topics in the

scenario-based exercise. So, with the necessary knowledge needed to complete the task, the student can successfully complete the scenario exercise.

In order to scaffold knowledge, learners must go through a process to equip their mental and physical faculties with appropriate tools to act. Conceptually speaking, we can turn back to the ideas of Illeris from Chapter 2. Illeris manifests his thinking behind the learning process in three dimensions: cognition (functionality), emotion (sensibility), and environment (sociality). Each contributes to the scaffolding of knowledge in discernible ways.

The dimension titled 'Environment' entails a person's interactions with people and communities. Essentially, integration is the force that shapes the contours of one's environment. This may include the learning environment, social environment, economic environment, etc. How a person coalesces and reacts to their surroundings will determine how s/he scaffolds and acts upon information.

Illeris's second dimension of cognition, which he associates with functionality, also impacts how knowledge is structured. In scenario-based training, cognition can often be seen as the mental action or process of acquiring knowledge through thought, experience, and the senses. Illeris's model helps expand this notion by showing that cognitive development is transmitted through environment and emotion.

Lastly, the emotional dimension involves "psychological energy, transmitted by feelings, emotions, attitudes, and motivations which both mobilize and, at the same time, are conditions that may be influenced and developed through learning" (2002, p. 18). Participants who underwent my scenario-based training curriculum dealt with high-

pressure cases of international terrorism and security. To act effectively in their jobs, officers must be emotionally fortified and stable. Thus, an emotional balance is central to the learning process, in addition to the aforementioned dimensions of environment and cognition.

Beyond Illeris, scenario-based training has illustrated to me that incidents can be categorized as tangible or abstract. The difficulty of many cases interestingly lies within the senses. For instance, tangible evidence at a crime scene can be used to build a case. Having physical proof can propel investigation at a faster pace than having no palpable items.

However, it is difficult to make decisions if tangible evidence is not available. This is where abstract thinking comes into being. Suppose someone receive a note from an unknown person suggesting hostile intent. What steps would be taken to build a case? Since no event has occurred, will one just depend on behavioral analysis? These questions are at the heart of an arduous situation that requires careful examination.

It is this gap of obscurity within abstract incidents that scenario-based training attempts to fill. Emphasizing deception detection and information elicitation in the context of behaviors can equip learners to address abstract situations that pose a danger to society.

Lessons Learned About Scenario-Based Training (SBT)

Based upon my years of experience in designing and administering scenario-based training, there are 10 things I would tell any SBT trainer.

1. Define the training objectives at the beginning of the course, thus laying the foundation. The training objectives require the instructor to describe the purpose and expected results. The key to the training and student learning ensures the course goals are to provide a road map to assist student learning and measure student learning and knowledge. The objectives focus on what the student will get from the course or what they can expect to get from the course. The training objectives are designed to be measurable and will inform students what level of knowledge they will be able to demonstrate post course. For example, if they will be able to demonstrate an activity or have knowledge of how to do something. The training objectives describe and define the course and expected results.

2. Prepare the students/participants for scenario-based training/learning. Define and explain SBT and provide instructions on the SBT and expectations, goals and purpose for students participation and what's in it for them

3. Get the students/participants motivated to learn new skill sets. Realistic scenarios with SME's and instructors providing real time timely feedback. Former students provide success stories and benefits of the training.

4. Provide the students/participants with realistic scenarios. The scenarios are based on actual situations students will face or have faced. For example, if students work in an airport screening or have a job where they must be able to detect deception via interviews; the questions and scenarios will address similar situations.

5. Develop mentors/coaches to provide the feedback. The mentors are SME's and experienced coaches/mentors with years of experience working with students. They provide immediate one-on-one feedback and also in classroom feedback. The Role players also critique the students. Students are asked what they did right and what they would do differently.

6. Provide critical and constructive feedback. The feedback has to be actionable and provide the students an opportunity to practice and apply the feedback.

7. Prove that someone has learned something once the training/learning is completed. Based on the feedback which includes question and answer/ SBT and practice the student's improvement in the SBT, Q&A and feedback provided from the field where students have successfully applied the knowledge and skills learned in class to real world situations.

8. Engage learners by requiring them to use their new knowledge to solve real-world problems. Students are able to raise real situations in class and practice the skills in the SBT. The SME's and role players provide an opportunity for students to work through real-world issues they have faced or will likely face. Practice skills presented in the class room.

9. Encourage learners to use the new knowledge or skill in everyday life. Throughout the course, instructors and SBT the students are encouraged to apply and use skills taught when they are I the field. The more they apply the skills learned in SBT their skill and confidence levels will likely increase;

some may experience immediate successes applying knowledge and skills

learned from SBT.

10. The ultimate objective is for students/participants to remember what has been

learned.

Practicing and applying the skills in real world situations enhances students

ability to detect deception when conducting interviews or identifying deceptive behavior.

The skills learned in SBT should be practiced and applied immediately upon returning to

the field to ensure the knowledge is retained.

In today's world of terrorism, students involved in the discipline of deception

detection and elicitation of information may face many new threats that their training

may have not covered. To counter this, scenario-based training can offer a variety of

realistic situations that students can use to hone their skills and learn new techniques.

In sum, this chapter can be captured by two central ideas that surface once

scenario-based training is considered. The first is to organize and weigh the facts that will

be impactful in training. In the relevant context, how would one develop a scenario? How

much time is available to execute instruction? What are the costs involved? How will

cultural factors implicate results? What intelligence and security concerns need to be

addressed? These issues deserve a great deal of attention when scenario-based training is

being prepared and practiced.

Second, scenario-based training should occur early in one's career and with the

right role-players. As Table 7 and Question 15 describe, one of the lowest scores was

awarded to the variable "Received Training When Needed". While participants felt that subject matter experts deserved the highest ratings, the timing of the instruction was deemed unsatisfactory. Since data suggests that training should be received at an early stage of a participant's career, future workshops must take this into serious consideration. Indeed, the very purpose of training is to prepare for a situation, not react to it. It is therefore central that there be proactive training instead of reactive training, especially in the case of major security threats. Attaining the rudimentary and advanced education in scenarios will equip one with the appropriate skills to tackle a wide array of real life situations. It is easier for scenario-based training to rest as the foundation as opposed to being implemented later in the career span. In addition, utilizing subject-matter experts and role players is central to the desired results of scenario-based training. Role players are brought in to mold participants into better practitioners.

Having noted the imperatives of scenario-based training, from developing scenarios to scaffolding knowledge, we now turn to the final chapter. In it, we will discuss real world implications and offer some closing statements.

CHAPTER 5: IMPLICATIONS AND CONCLUSIONS

The actions of any country's security forces may have profound or subtle

consequences. While security operations throughout the world function with diverse

methods, the performance of each is predicated on the training that is received. As has

been argued throughout this work, scenario-based training is a form of instruction that

can be highly effective in detecting deception as well as eliciting information. In this

chapter, three main areas will be covered in relation to scenario-based training. First, the

implications for practice will be discussed. Next, there will be recommendations for

future researchers who plan on undertaking similar studies. And lastly, the conclusion

will present some final thoughts while binding together the preceding chapters.

Implications for Practice

The world has changed dramatically since September 11, 2001. Due to the

seismic effects of such an event, the apparatus of modern domestic security is perpetually

transforming. As techniques of breaching and violating defense grow more sophisticated,

security personnel must do the same. Now, more than ever, Americans have to consider

the mindset of the adversaries who have breached the nation's borders. What are their

beliefs and ideologies? What are they trying to accomplish? What are their motivations?

What are they willing to risk or sacrifice? Are the intelligence and law enforcement

organizations of a country willing to meet that level of risk or sacrifice to stop the

adversary? These are some imperative questions that require academic rigor as well as empirical training and oversight. Understanding the rationale behind adversarial decisions can enable security practitioners to better manage critical moments. This would require a diligent study of culture, rapport, deception, interviewing, et cetera. However, while it is essential to study the mindset of one's adversaries, it is equally significant that one addresses the opinions and judgments of domestic agencies that work to preserve a nation's security.

The views of law enforcement and intelligence must change. Generally speaking, "views" are particular ways of regarding or considering something. In the arena of security, most dispositions are often homogenous and outdated. Simply put, law enforcement and intelligence often find new ways of doing old things. Since views influence and propel actions, and as results of security measures often are considered unfavorable, it is essential to transform fundamental perspectives. Current perspectives are problematic because the notions of security and safety are often encouraged in a seemingly contentious manner. For example, if one were to do a survey of mission statements issued by the U.S intelligence community, the results would evoke connotations of militarism instead of diplomacy. Amid bodies such as the Department of Defense, Department of Homeland Security, and the Department of State, words that often recur at a high frequency are "prevent," "enforce," and "secure." The rhetoric of containment not only signals a defensive mindset, but also seems to place learning and statesmanship on the fringe. Although enforcing laws and preventing major critical events is obviously vital, the profession must now become more insightful, intuitive, and

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proactive. This will require using all of the training, knowledge, skills, and abilities that it has acquired, as well as developing new strategies and techniques. The primary strategy mentioned in this work to enhance the field of security is scenario-based training. Although this style of pedagogy is not new, it appears to exist only on the margins of practice. By amplifying scenario-based training, the security apparatus may begin to truly execute its mission.

Scenario-based training is an amalgamation of knowledge, experiential learning, and skills-based training. Just as new police officers cannot learn how to use a firearm in a classroom setting without practical shooting exercises on the range, they also cannot know how to handle a person with hostile intent in a fast-paced situation without training in a realistic, dynamic setting. In the current study, scenario-based training emphasizes realistic portrayals and training of relevant work to strengthen two key skills: deception detection and information elicitation. However, such training is not simply the mimicking of real job duties. Nor is it an exercise of solely understanding the dynamics of deception. Rather, scenario-based training is a highly structured concept using real-world experiences to meet security-related objectives. The key factor intended to carry out productive practice is indeed training, and particularly how it is executed.

Training should always be designed and developed to give police and intelligence officers the skills to successfully complete a task. General training, therefore, can be broad in scope, as in teaching law. Rather than teaching all of the particular ways a person can deceive, the more effective means involve teaching the elements that constitute the understanding of behavioral assessment. Often perceived as a one-

dimensional practice, behavioral assessment actually possesses many components. The goal with scenario-based training is to give participants the skills and abilities that they can use in any encounter.

As an example, there are stories about police officers in the field picking up their shell casings after discharging their firearms or firing two rounds, and then immediately returning their weapons to their holsters. Why would officers do these things? Well, because they practiced that way. This bears witness to the fact that officers in the field will revert to their training, even though it may incorporate hazardous dynamics. Such repetitions of behavior evoke the "creatures of habit" notion. Since practitioners in many fields often perform their duties in constant replication, it is prudent to address and adjust the underlying context, which of course is the training. By modifying the pillars of training, improvements can be made to real-world practice. With this in mind, police and intelligence officers must develop critical skills and abilities that will transfer into the field when called upon. An officer's ability to think, move, and react proves critical to his or her survival.

Likewise, an evaluation mechanism is crucial for measuring the desired skills and abilities and identifying any undesirable actions. By evaluation mechanism, I mean that there must exist a method to measure efficacy of training or preparation after it has been carried out. For instance, the evaluation mechanism used in this current study involved surveys to assess scenario-based training. Furthermore, the evaluation should always incorporate a critique where students receive an objective, constructive summary of their performance.

The best place to start is by listing all of the goals and objectives that the instructor thinks students should meet by the end of the training and then working toward meeting those objectives. Defining training objectives at the beginning will actually lay the foundation of a scenario-based training program, and this is how. Similar to a process of inductive reasoning, having a parochial outlook at the start of any endeavor provides important boundaries to reach general conclusions. Pairing this with experiential learning and the application of real-world scenarios, a trainee may be comfortable with any encounter while maintaining a foundational understanding. Put simply, clarifying objectives and standards at the beginning is beneficial toward long-term achievements.

The last and final area of concern in organizing a scenario-based training program is the importance of the evaluations. Evaluations can be completed in many ways, but they must always be constructive. After all, students attend training to learn and know that they will make mistakes. Therefore, critiques and evaluations should never demean or malign a student. Rather, students need to know where they performed poorly and also where they performed well. The goal is to develop students to where they can evaluate their own performance and learn from their own mistakes. Evaluations catalyze the learning process because they act as devices of reflection and recommendation. Integral to scenario-based training, they are a way of perpetuating a student's understanding after the training has ended. Thus, participants may use them to improve or adjust their practice for greater effectiveness.

Each training objective should be evaluated as it relates to the specific scenario. The type of scale is not as important as the way it is used. Students should have their own

individual evaluation sheet to track and document any areas where they need additional or remedial training. For example, a form with a field for each training objective using a rating scale of 1 to 5 (1 being poor, 3 being average, and 5 being outstanding or excellent) can work well.

It also is important to solicit feedback from the students as to their views of the training program. Complacency with an already existing training program or operations manual can often shadow many imperfections. It is therefore significant that programs should always be evolving to meet the needs of participants while providing the best possible training.

<div align="center">**Suggestions for Future Research**</div>

Scenarios can vary from basic and direct to detailed and elaborate. The important thing to keep in mind is what students should accomplish. The whole purpose of scenario-based training is to provide students with real-life situations in a controlled environment where they can learn. After almost seven years of practical application of a curriculum structured design for educating adults in detecting deception and eliciting information, I have found that in today's world of terrorism and security breaches, law enforcement and intelligence officers face many new threats that their training may not have covered. Examples include modern cyber threats, document forging, and behavioral deception—to only name a few. To counter this, scenario-based training offers realistic situations that students can use to hone their skills and learn new techniques. A key suggestion for ensuing researchers, then, is to stay updated with modified and nascent threats.

It would also be beneficial for future researchers to have access to previous data. A transparent pool of information can allow for comparative analysis and deeper study. Since government policy disallowed such an undertaking for my program, this current study relied mostly on evaluation results. However, those who will conduct studies after this precedent may find it highly fruitful to utilize a control group alongside a group undergoing a particular program, as the contrast between the two may illuminate key findings.

A further suggestion involves applying the scenario-based training model to other professions besides law enforcement and intelligence. Although they were specialized in this study for deception detection, properties of scenario-based training could also be administered for business, finance, law, et cetera. Expanding the conceptual framework of scenario-based training by adding new constructs or variables may enhance training to an important degree. The impact of culture, theory of mind, and rapport building are a few components that could be used to expand the current model.

One may also choose to build upon the current literature pertaining to experiential learning. Chapter 2 highlighted some notable theories surrounding pedagogy. It may be of value to augment or restructure such theories in an empirical context. Traditional training methods could be explored in new ways. Empirical experiments addressing education may be conducted to build upon, corroborate, or refute existing learning theories.

Conclusions

Developing a successful scenario-based training program requires establishing firm training goals and objectives that provide participants with skills they can use to complete their tasks effectively. Creating scenarios that incorporate these goals and objectives can allow participants to practice a variety of techniques and strategies in a safe environment. Such realistic training may give students a tactical advantage when they face the rigors in some cases in enforcing the law, safeguarding the public they serve, and, most importantly, protecting themselves from intent.

I have found that there are two major critical skills necessary to develop a curriculum for this type of training. The first is a mastery of the subject matter. The second requires an in-depth knowledge of the art and the science of presenting that information in the best way for a specific audience. This will keep students engaged while retaining the critical learning objectives.

Had there been permission to retrieve prior archival data, the current study could have carried out a comparative analysis of a control group vs. the group that underwent scenario-based training. However, since older data could not have been obtained, the current study was predicated on evaluations that participants completed.

Nevertheless, the immense positive responses collected by the surveys greatly suggest that scenario-based training was a constructive, multifaceted, and pragmatic way to enhance on the job performance. The three-pronged approach employed throughout this work reinforced a curriculum structured design focusing on deception detection and information elicitation. First, the literature review inspected traditional and modern

scholarship relevant to experiential pedagogy. Next, archival records from a deception

detection training course were evaluated. Lastly, curriculum strategies were proposed

while implications and limitations were also addressed.

The current study essentially performed four interrelated steps: set training goals,

create scenarios, incorporate a realistic practice and atmosphere, and carry out an

evaluative assessment. While it is imperative that students use experience as the vehicle

for training, it is up to the instructor to provide that sense of direction. Moreover, the very

framework of the training must be built so that a two-way exchange may occur.

Between the instructor and learner, scenario-based training seeks to nurture not a

one-directional form of instruction, but rather a noble intellectual joust. However, it is

important to note that although scenario-based training may be structured in one of many

ways, it is the instructor that is its most pivotal component. If we recall the evaluative

results of the current study (Tables 1 and 2), the three highest scores pertain to the

instructor and his or her key qualities: professionalism, preparation, and demonstration of

knowledge. The highest rated variables were concentrated around the instructor's

performance and suggest that participants gained much during their training. To

corroborate this notion, we can recollect one of many variables linked with instruction.

The variable Training Will Be Useful in Performing Job (TrUseJob) received a mean

score of 4.84 out of 5, indicating strongly that job skills will likely improve for the

trainees.

This study has sought to encourage scenario-based training as a valuable resource

for fields that consistently underperform in preparing military, intelligence, and law

enforcement personnel in reference to deception detection and information elicitation. The urgency for protection is greater than ever, and the United States has done much to spearhead global security measures. However, today's adversaries are vast in quantity and sophisticated in various technologies. Although the United States possesses manpower and technical prowess, it still lacks proper leadership and training. The latter, in particular, is where this nation can improve most. A ubiquitous presence around the world, both by influence and physical attendance, means not only that the responsibility of adequate training is of utmost importance, but also that there is little room for error. For that reason, it could not be timelier that we return to the fundamentals of practice and harness scenario-based training as an instrument for change.

APPENDIX A. SURVEY QUESTIONS

Section 1 Course Evaluation

1. The course content matched the objectives.

2. The course materials were easy to understand.

3. The learning aids (e.g., handouts, case study materials, PowerPoint's, job aids) helped

    me learn.

4. The learning activities encouraged my participation.

5. The course provided opportunities to practice and reinforce what was taught.

6. The course length was sufficient to deliver the content.

7. The training increased my knowledge of the course topics.

Section 2 Instructor Evaluation

8. The instructor(s) was prepared for class.

9. The instructor(s) demonstrated a thorough knowledge of the subject matter.

10. The instructors' responses to questions were clear and understandable.

11. The instructors' conduct was free of biases and prejudices.

12. The instructor(s) conducted the course in a professional manner.

Section 3 Classroom Environment

13. The training facilities were conducive to learning.

Section 4 Job Applicability

14. The training will be useful in performing my current job.

15. I received this training when I needed it.

16. The practical exercises were good simulations of the tasks that I actually perform on

my job.

Section 5 Overall Ratings

17. The course overall met my needs and expectations.

18. The instructors' performance overall met my needs and expectations.

19. The training facilities overall met my needs and expectations.

APPENDIX B. VARIABLE FREQUENCY TABLES AND FIGURES

Course Content Matched the Objectives (Objective)

Throughout the training, was the course an effective and pragmatic measure of what is needed to benefit the participant in excelling in their work? Were the trainings adequate towards representing the interests of the organization and the needs of the job field? Referring to the data collected, there was an overwhelming majority in favor of the agreement that course content specifically matched the objective requirements. The mean of 4.82 demonstrates the efficacy of the training to address the content matching the objectives.

Table B1

Question 1: Objectives Met

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	3	1	.1	.1	.5
	4	288	16.1	16.1	16.6
	5	1490	83.3	83.4	100.0
	Total	1787	99.9	100.0	
Missing	System	1	.1		
Total		1788	100.0		
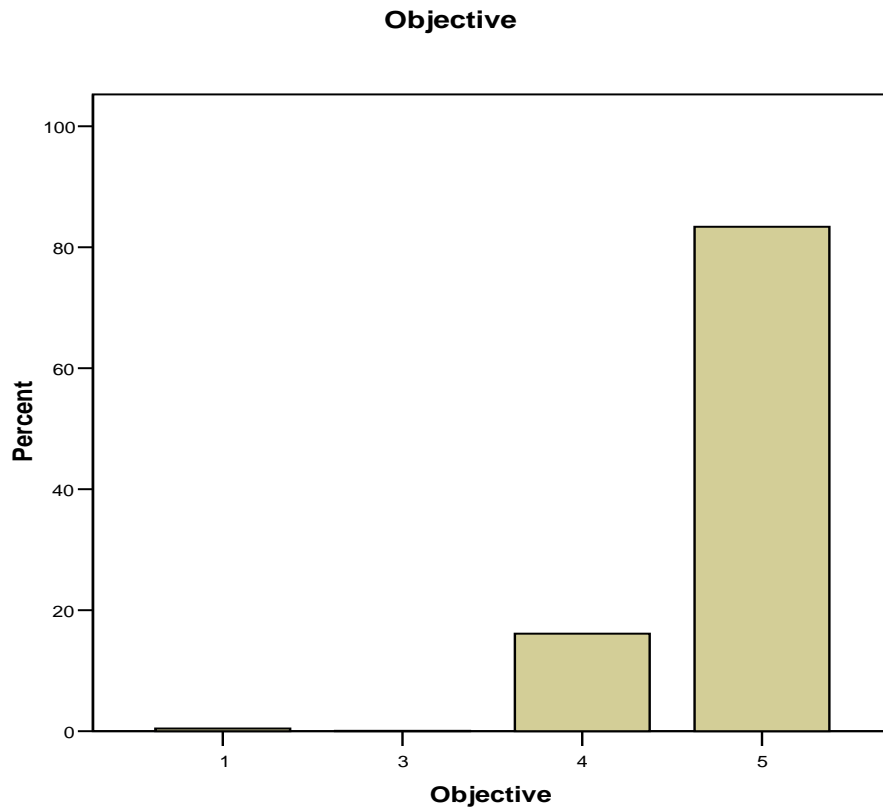
Objective

Figure B1. The course content matched the objectives.

Material Was Easy to Understand (EasyUnd)

Was the material presented easy to comprehend to allow its application towards the job? Given the multitude of ways for which the information could be communicated, was the information easy to understand in order for the subject to apply it to the field? In this case, the mean of 4.72 can show a higher success of the material being comprehensible but as can be seen in Table B2 and Figure B2, there is a bit more of a general mid-section than was shown in Figure B1.

Table B2

Question 2: Materials Easy to Understand

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	1	.1	.1	.5
	3	7	.4	.4	.9
	4	457	25.6	25.6	26.5
	5	1313	73.4	73.5	100.0
	Total	1786	99.9	100.0	
Missing	System	2	.1		
Total		1788	100.0		

EasyUnd
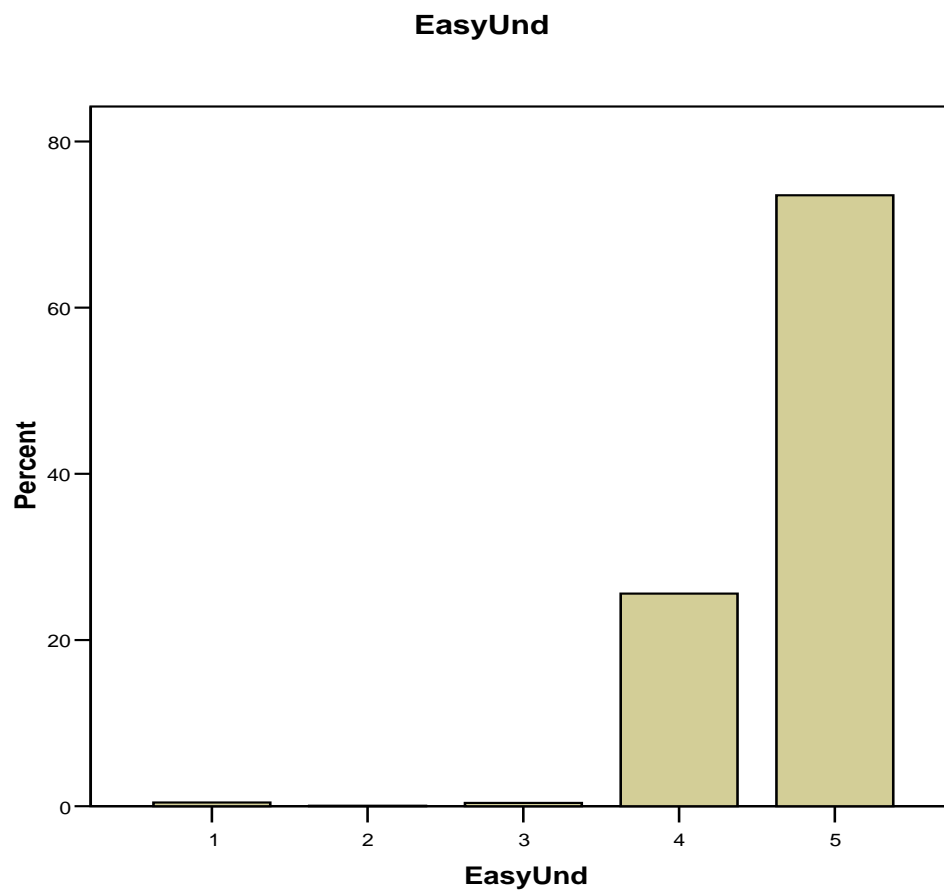
Figure B2. The course materials were easy to understand.

Learning Aids Were helpful (LearnAid)

Were learning aids such as PowerPoint's, handouts, job aids, and case study

materials helpful in learning subject content? From the cost-benefit perspective, was the

material useful and did it serve its purpose in communicating the training? In concern

with learning aids being useful, most regarded them to be essential to the training while a

smaller sample noted a 1, 2, and 3 on the rating scale producing a mean of 4.72

satisfaction with the material.

Table B3

Question 3: Learning Aids Helpful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	.4	.4	.4
	2	3	.2	.2	.6
	3	16	.9	.9	1.5
	4	423	23.7	23.7	25.2
	5	1336	74.7	74.8	100.0
	Total	1785	99.8	100.0	
Missing	System	3	.2		
Total		1788	100.0		
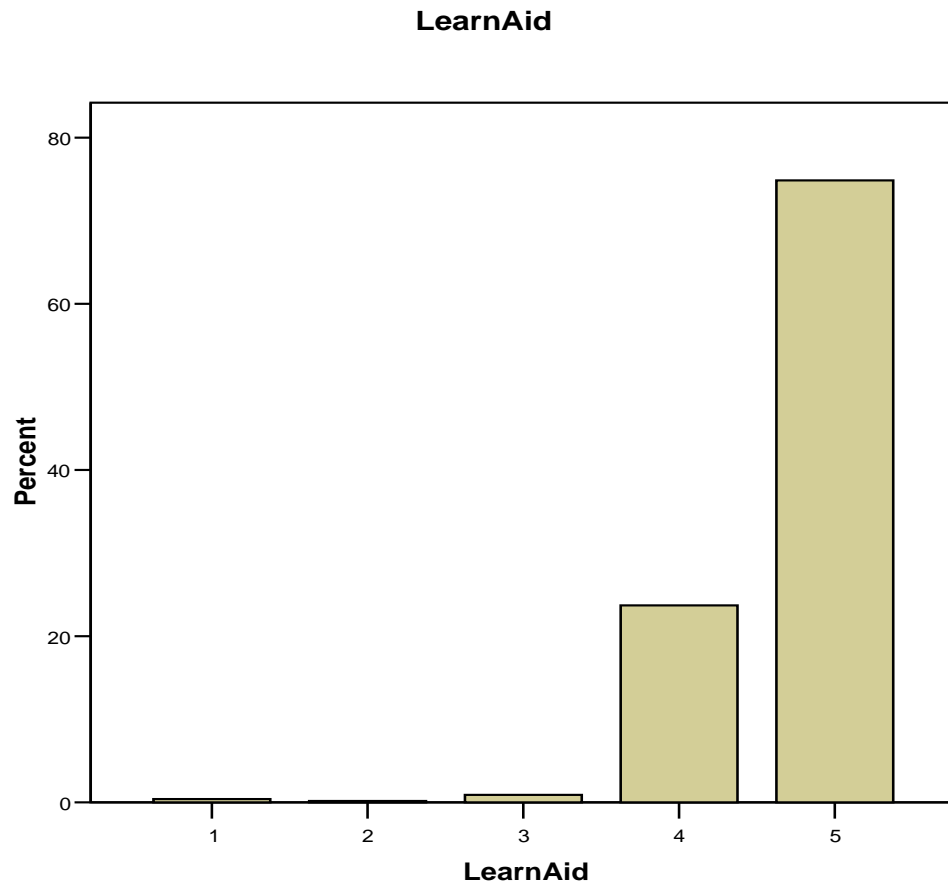
LearnAid

Figure B3. The learning aids (e.g., handouts, case study materials, PowerPoint's, job aids) helped me learn.

Learning Encouraged Participation (LearnAct)

Did the activities engage the participant and encourage participation within the simulations? Subjects may deter from actively participating within simulations, which is the reason for which this factor was accommodated within the survey. A higher mean of 4.85 was expressed in accordance to encouraging the participation of the subject which can be shown to reflect the verification of the answers given pertaining to the

effectiveness of the training. If subjects are more willing to participate, there is a stronger

verification upon the accuracy of the survey.

Table B4

Question 4: Learning Activities Encouraged Participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	.5	.5	.5
	2	1	.1	.1	.6
	3	2	.1	.1	.7
	4	226	12.6	12.7	13.4
	5	1538	86.0	86.6	100.0
	Total	1776	99.3	100.0	
Missing	System	12	.7		
Total		1788	100.0		

LearnAct

Figure B4. The learning activities encouraged my participation.

Opportunities to Practice (OppPract)

Did the courses provide opportunities to practice and reinforce what was taught?

With a mean of 4.79, the general consensus seems to concur that the course provided

these opportunities to reinforce what was learned.

Table B5

Question 5: Opportunities to Practice and Reinforce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	.6	.6	.6
	2	20	1.1	1.2	1.7
	3	12	.7	.7	2.4
	4	242	13.5	13.9	16.3
	5	1455	81.4	83.7	100.0
	Total	1739	97.3	100.0	
Missing	System	49	2.7		
Total		1788	100.0		

OppPract

Figure B5. The course provided opportunities to practice and reinforce what was taught.

Course Was of Sufficient Length (Length)

Was the course of sufficient length to deliver the content? Many may not grasp

the content material and may need time to become salient to the subject matter.

According to Table B6 and the graph in Figure B6, there was a very tumultuous outline

of opinions concerning the length of the course. This level of discrepancy can be derived

from a multitude of factors such as the familiarity that the subject may have already had

in regards to not needing the time to understand the content. Many thought the training

was not long enough but those who rated their opinions chose 2 over 1 in most cases

where the variable resulted in a rating that was below the average mean of 2.5. This can

infer that those who thought the length was too short had at least confirmed that there was

significant time for different topics in the training.

Table B6

Question 6: Length of Course Sufficient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	179	10.0	10.2	10.2
	2	495	27.7	28.3	38.6
	3	158	8.8	9.0	47.6
	4	416	23.3	23.8	71.4
	5	499	27.9	28.6	100.0
	Total	1747	97.7	100.0	
Missing	System	41	2.3		
Total		1788	100.0		

Length

Figure B6. The course length was sufficient to deliver the content.

Training Increased Knowledge (CrsKnow)

Did the training increase the participant's knowledge of the course topics? With a mean of 4.84 and an extensive continuous pattern of approval towards the affirmative (Table B7 and Figure B7), the knowledge improvement seems to have succeeded in its application. Also, given this stable pattern of preference towards the affirmative, and noting that the sample consisted of only 1,754 subjects as opposed to the previously

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mentioned samples of above 1,770 participants, one could speculate that ratings would be

even higher given the larger number of participants.

Table B7

Question 7: Training Increased My Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	.6	.6	.6
	2	2	.1	.1	.7
	3	3	.2	.2	.9
	4	233	13.0	13.3	14.1
	5	1506	84.2	85.9	100.0
	Total	1754	98.1	100.0	
Missing	System	34	1.9		
Total		1788	100.0		

CrsKnow
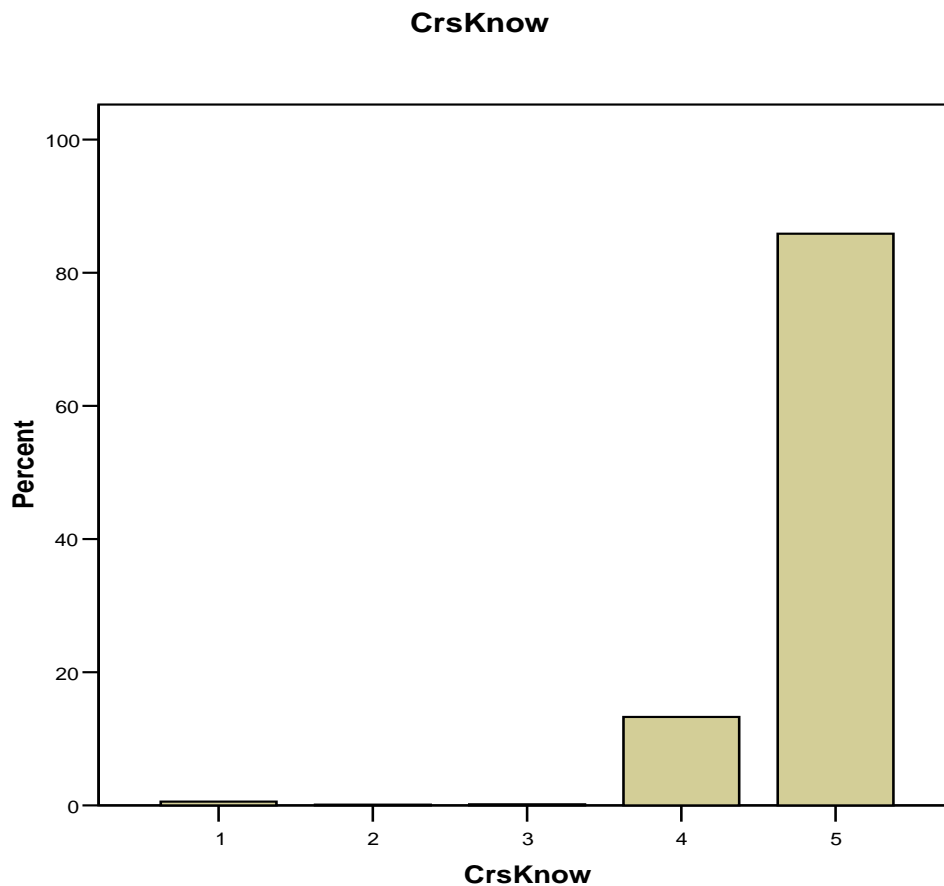
Figure B7. The training increased my knowledge of the course topics.

Instructor Was Prepared (InsPrep)

Was the instructor prepared with the adequate material needed to effectively deliver the training content? Given that this section consisted of the full number of participants (1,788), and that the mean was 4.90, it may be concluded that this section was satisfied (Table B8 and Figure B8).

Table B8

Question 8: Instructor Prepared

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	1	.1	.1	.5
	4	142	7.9	7.9	8.4
	5	1637	91.6	91.6	100.0
	Total	1788	100.0	100.0	
Missing	System	0	0		
Total		1788	100.0		

InsPrep
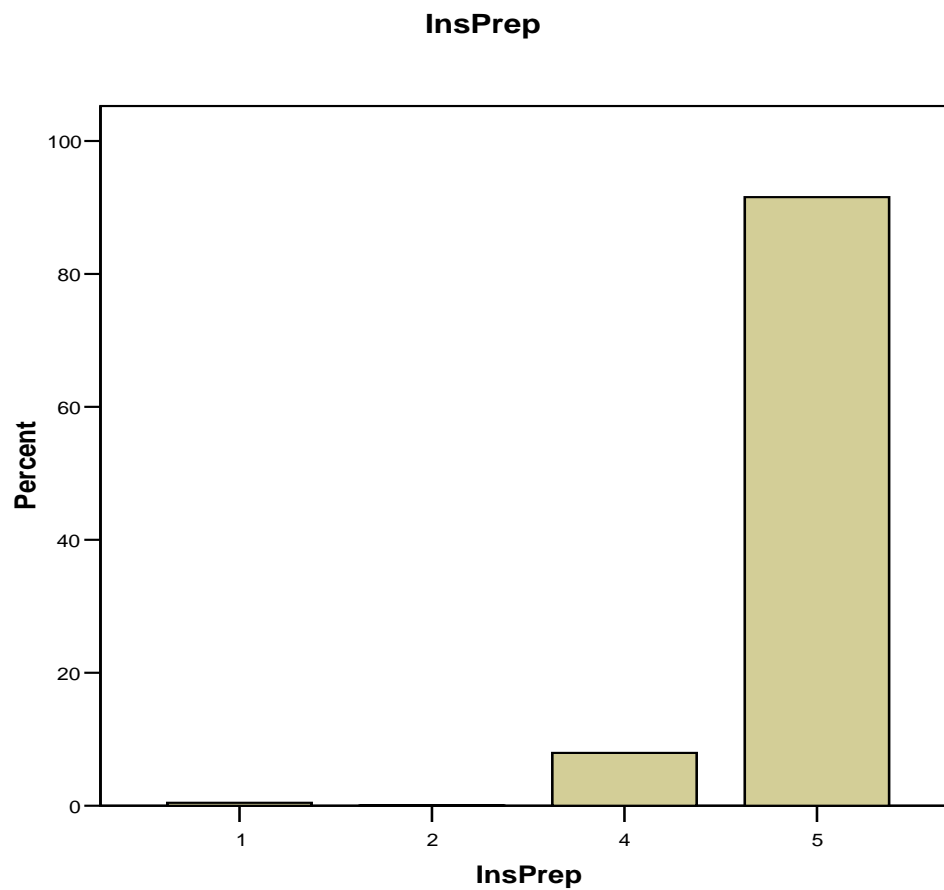
Figure B8. The instructor(s) was prepared for class.

Instructor Was Knowledgeable (InsKnow)

Was the instructor knowledgeable of the subject matter? It is integral for the instructor to not just reiterate the information but to be able to understand the subject material in a way that can produce an adequate response to questions and concerns. According to Table B9 and Figure B9, an overwhelming majority attested that the requirements were satisfied as can be seen from the mean of 4.92.

Table B9

Question 9: Instructor Demonstrated Thorough Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	4	114	6.4	6.4	6.8
	5	1664	93.1	93.2	100.0
	Total	1786	99.9	100.0	
Missing	System	2	.1		
Total		1788	100.0		

InsKnow

Figure B9. The instructor(s) demonstrated a thorough knowledge of the subject matter.

Instructor Was Clear in Response (InsClear)

Were the instructor's responses clear and understandable in relaying subject matter? The results of the training can be entirely dependent upon the quality of the instructor's communication. Table B10 and Figure B10 may correlate with the results of Figure B2 in that the ability to comprehend the instructor's assignment can relate to the ease for which the assignment is understood. This section was given a rating mean of 4.86.

Table B10

Question 10: Instructors' Responses to Questions Clear

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	1	.1	.1	.5
	3	6	.3	.3	.8
	4	196	11.0	11.0	11.8
	5	1576	88.1	88.2	100.0
	Total	1787	99.9	100.0	
Missing	System	1	.1		
Total		1788	100.0		

InsClear
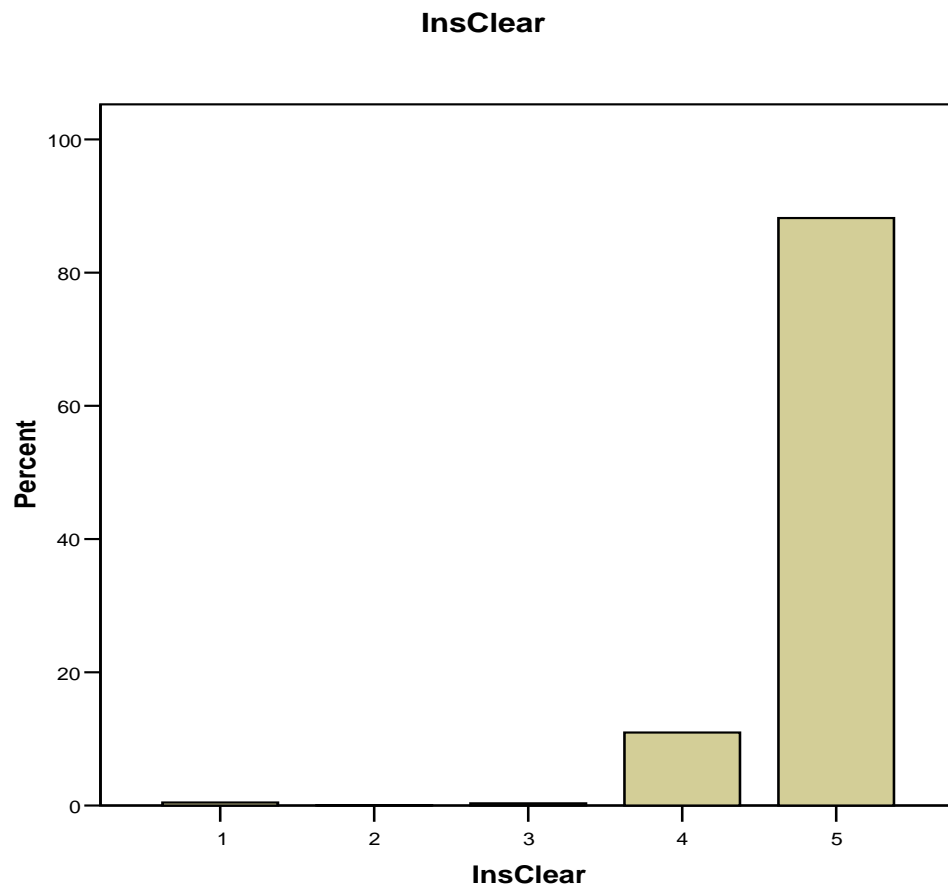
Figure B10. The instructors' responses to questions were clear and understandable.

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Instructor Unbiased (InsUnbias)

Was the instructor's conduct free of biases and prejudices to the content to present

the material in an objective method? Regarding the means for which the topic was

covered, the survey based importance in objectivity within the training. The mean results

in Table B11 and Figure B11 expressed that the opinion of those participants generally

agreed that the subject content was relayed objectively and without bias as the mean was

assessed at 4.89.

Table B11

Question 11: Instructor Free of Bias and Prejudices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	4	.2	.2	.7
	3	9	.5	.5	1.2
	4	193	10.8	10.8	12.0
	5	1573	88.0	88.0	99.9
	55	1	.1	.1	100.0
	Total	1788	100.0	100.0	
Missing	System	0	0		
Total		1788	100.0		

InsUnbias
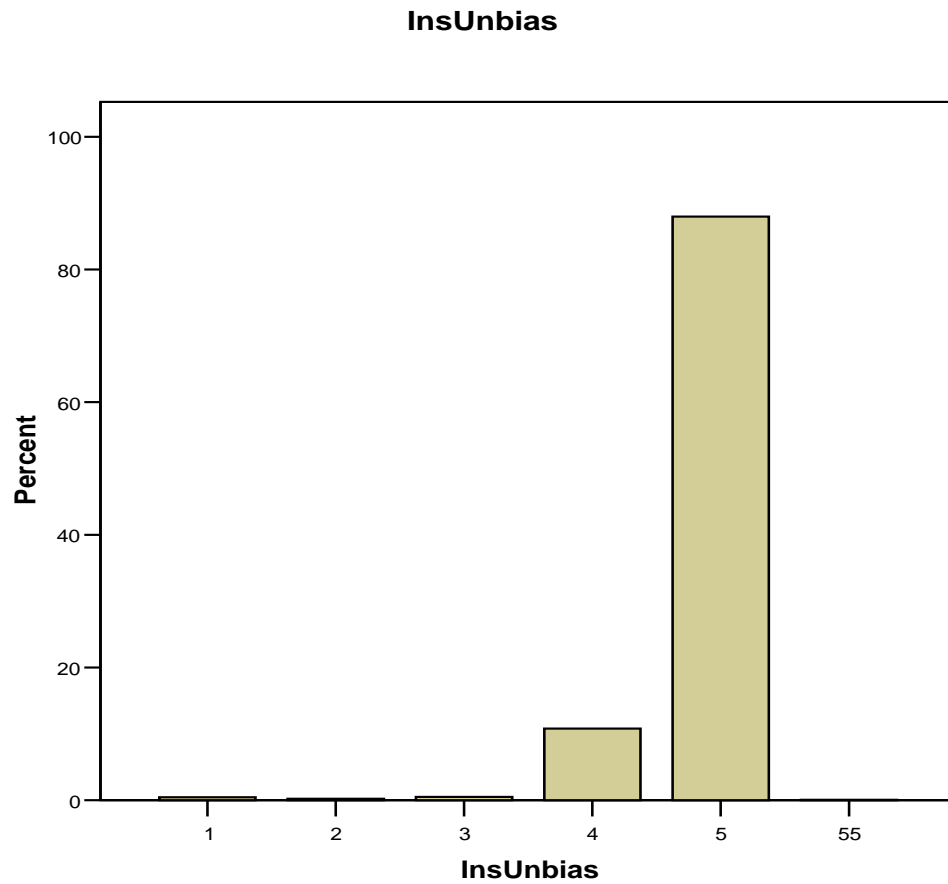
Figure B11. The instructors' conduct was free of biases and prejudices.

Instructor Performance (InsProf)

Did the instructor conduct the course in a professional matter? An overwhelming majority held that the course was instructed in a purely professional manner as the mean indicated a result of 4.91 concurrences toward the affirmative.

Table B12

Question 12: Instructor Professional

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	2	1	.1	.1	.5
	4	133	7.4	7.5	8.0
	5	1640	91.7	92.0	100.0
	Total	1782	99.7	100.0	
Missing	System	6	.3		
Total		1788	100.0		

InsProf

Figure B12. The instructor(s) conducted the course in a professional manner.

Facilities Were Useful (FacilLrn)

Were the training facilities conducive to learning and adequate in their capacity to provide the necessary elements for the training? With a mean of 4.79, the graph may infer the satisfaction of the assessment. However, as seen in Table B13, 10 missing may indicate a possible rating of 4.80 or higher given the participation of the missing subjects.

Table B13

Question 13: Training Facilities Conducive

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	.5	.5	.5
	2	8	.4	.4	1.0
	3	7	.4	.4	1.3
	4	298	16.7	16.8	18.1
	5	1456	81.4	81.9	100.0
	Total	1778	99.4	100.0	
Missing	System	10	.6		
Total		1788	100.0		

FacilLrn
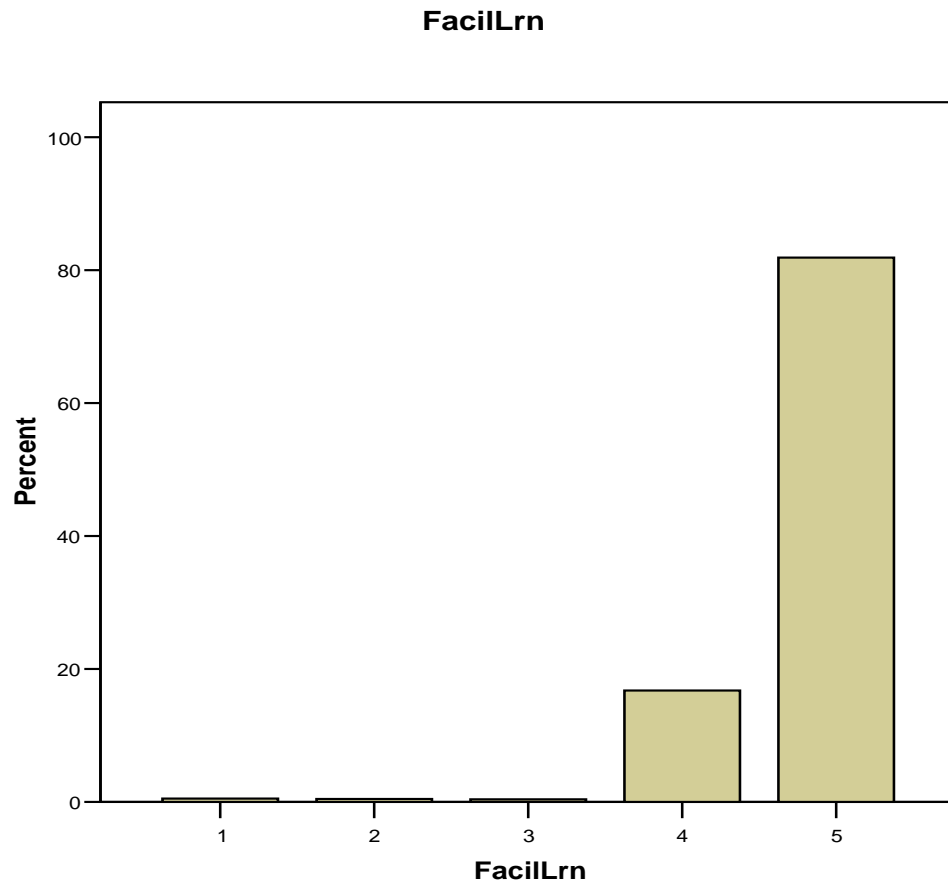
Figure B13. The training facilities were conducive to learning.

Training Was Useful (TrUseJob)

Will the training be useful in performing your current job? As a core component

and base of the training, there is a solid verification that the overall assessment concurred

that the training was indeed successful in meeting its objective. The mean of 4.84, shown

on Table B14 and Figure B14, validates the general agreement that the training will be

useful.

Table B14

Question 14: Training Will Be Useful in Performing Job

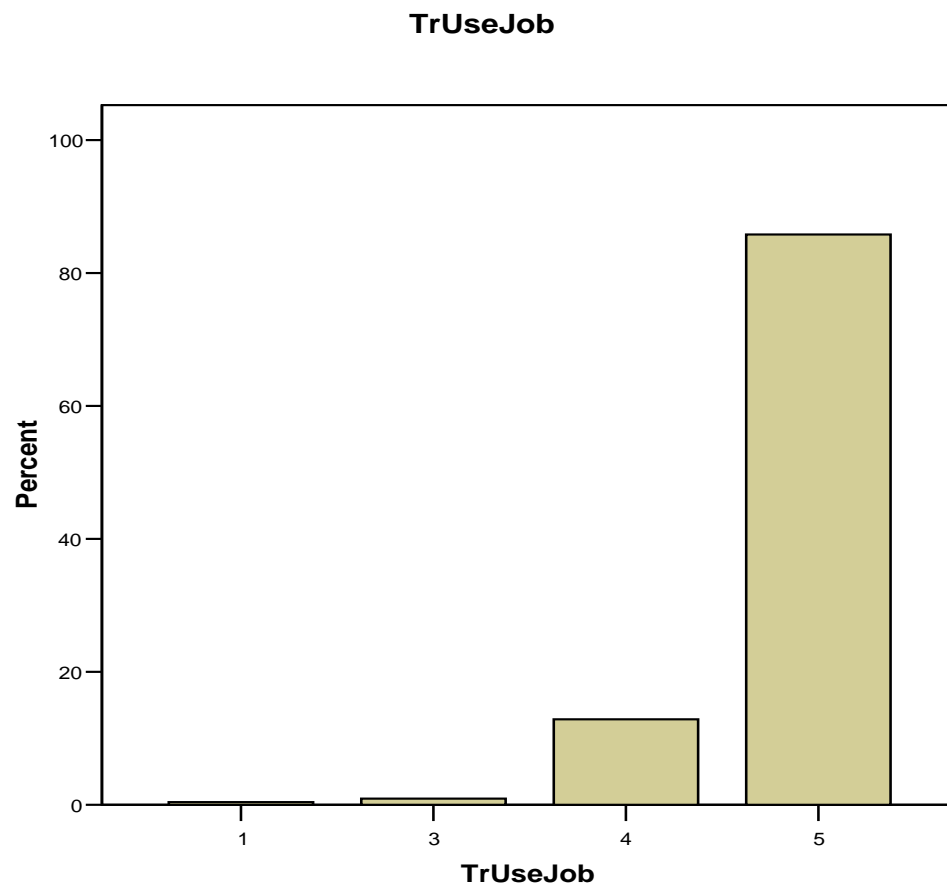|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	.4	.4	.4
	3	16	.9	.9	1.3
	4	221	12.4	12.9	14.2
	5	1473	82.4	85.8	100.0
	Total	1717	96.0	100.0	
Missing	System	71	4.0		
Total		1788	100.0		

TrUseJob

Figure B14. The training will be useful in performing my current job.

Training Was Given When Needed (TrNeeded)

Were you able to receive training when you needed it? In comparison to the

previous assessments, there is a strong discrepancy in the results of the data collected so

far. Table B15 shows in tabular format, and Figure B15 shows in a graph, that a large

amount of those rating the assessment in the negative in comparison to those who rated in

the affirmative. However, there is also the predominant fact that 77 participants were

missing which would have a great impact on the information received.

Table B15

Question 15: Received Training When Needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	3.4	3.5	3.5
	2	184	10.3	10.8	14.3
	3	86	4.8	5.0	19.3
	4	433	24.2	25.3	44.6
	5	948	53.0	55.4	100.0
	Total	1711	95.7	100.0	
Missing	System	77	4.3		
Total		1788	100.0		

TrNeeded

Figure B15. I received the training when I needed it.

Exercises Were Practical Simulations (ExSimul)

Were the practical exercises good simulations of the tasks that you actually perform on your job? The practicality of the simulation exercises is critical to the assessment. Table B16 and Figure B16 are interesting in that 105 participants were missing but the graph still indicates a continuous pattern of ratings in agreement that the practical exercises provided decent simulations for the participants. The mean was 4.81.

Table B16

Question 16: Practical Exercises Simulated Tasks I Perform

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.5	.5
	2	11	.6	.7	1.1
	3	15	.8	.9	2.0
	4	233	13.0	13.8	15.9
	5	1416	79.2	84.1	100.0
	Total	1683	94.1	100.0	
Missing	System	105	5.9		
Total		1788	100.0		

ExSimul

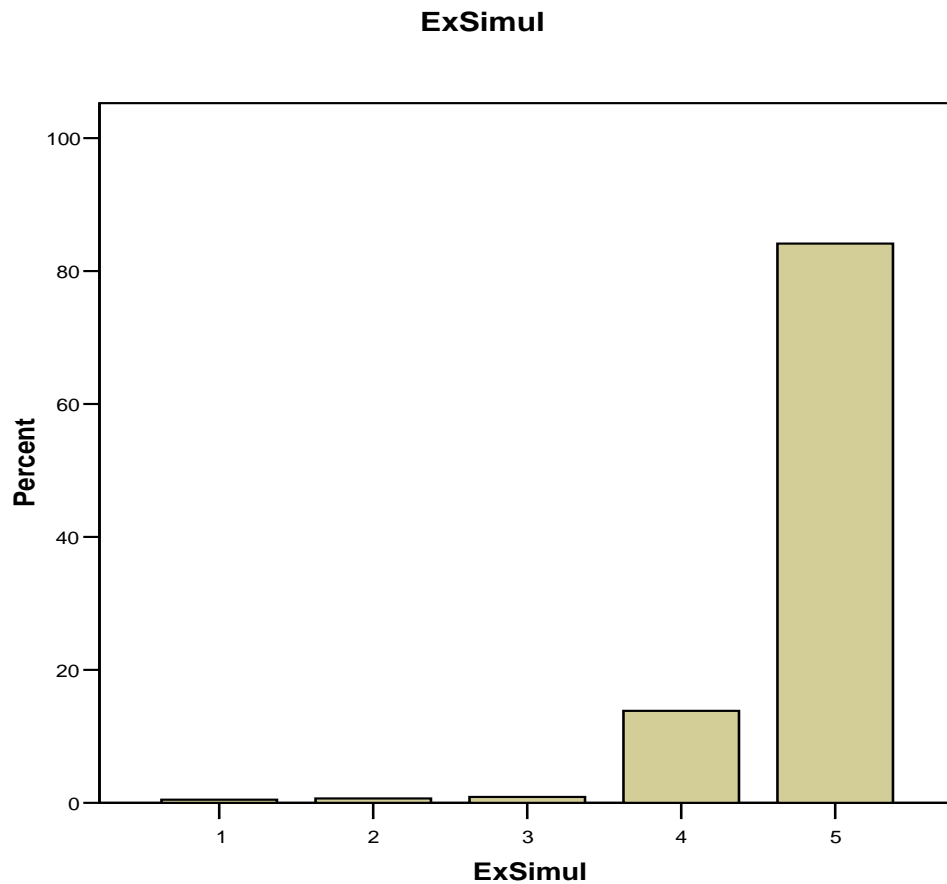*Figure B16*. The practical exercises were good simulations of the tasks that I actually perform on my job.

Course Overall Met My Expectations (CrsMet)

Did the course meet your overall needs and expectations? The mean demonstrated in Table B17 and the graph in Figure B17 is 4.80 with 0 participants missing from the tally. This indicates a solid affirmation that the course overall met the participant's needs and expectations.

Table B17

Question 17: Course Met My Needs/Expectations

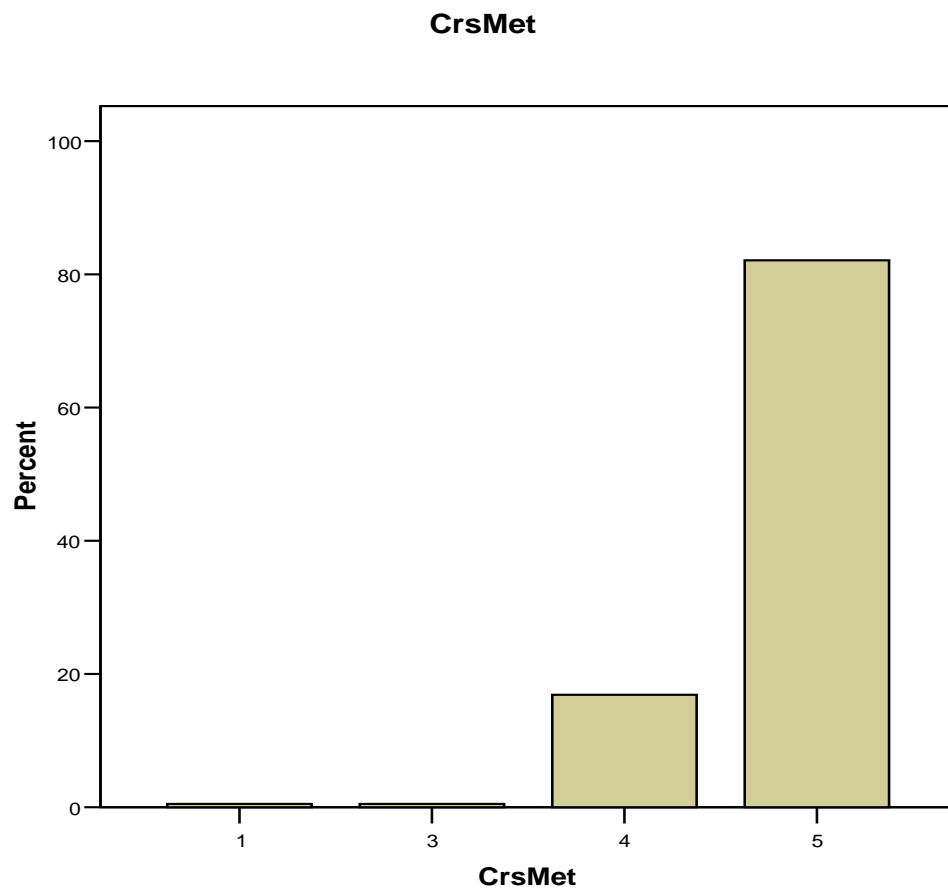|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	.5	.5	.5
	3	9	.5	.5	1.0
	4	302	16.9	16.9	17.9
	5	1468	82.1	82.1	100.0
	Total	1788	100.0	100.0	
Missing	System	0	0		
Total		1788	100.0		

CrsMet

Figure B17. The course overall met my needs and expectations.

Instructor's Performance in Training (InsMet)

Did the instructor's performance meet your overall needs and expectations? The

results shown in Table B18 and Figure B18 display that the overall consensus is in the

preference of the affirmative with a mean of 4.86 with only missing 2 participants.

Table B18

Question 18: Instructor's Performance Met My Expectations

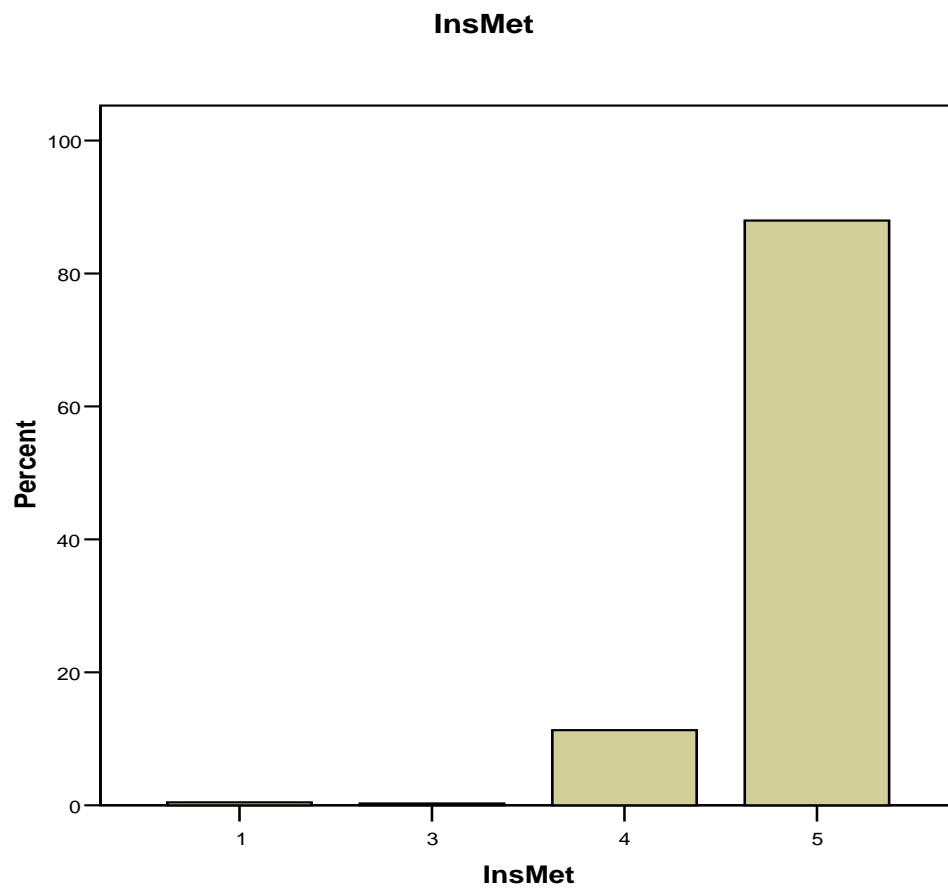|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	.4	.4	.4
	3	5	.3	.3	.7
	4	202	11.3	11.3	12.0
	5	1571	87.9	88.0	100.0
	Total	1786	99.9	100.0	
Missing	System	2	.1		
Total		1788	100.0		

InsMet

Figure B18. The instructors' performance overall met my needs and expectations.

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Facilities Met Requirements (FacMet)

Did the training facilities meet your overall needs and expectations? The facilities themselves seemed to accommodate the program requirements as the mean produced has a value of 4.78 with only 3 participants missing (Table B19, Figure B19).

Table B19

Question 19: Training Facilities Met My Needs/Expectations

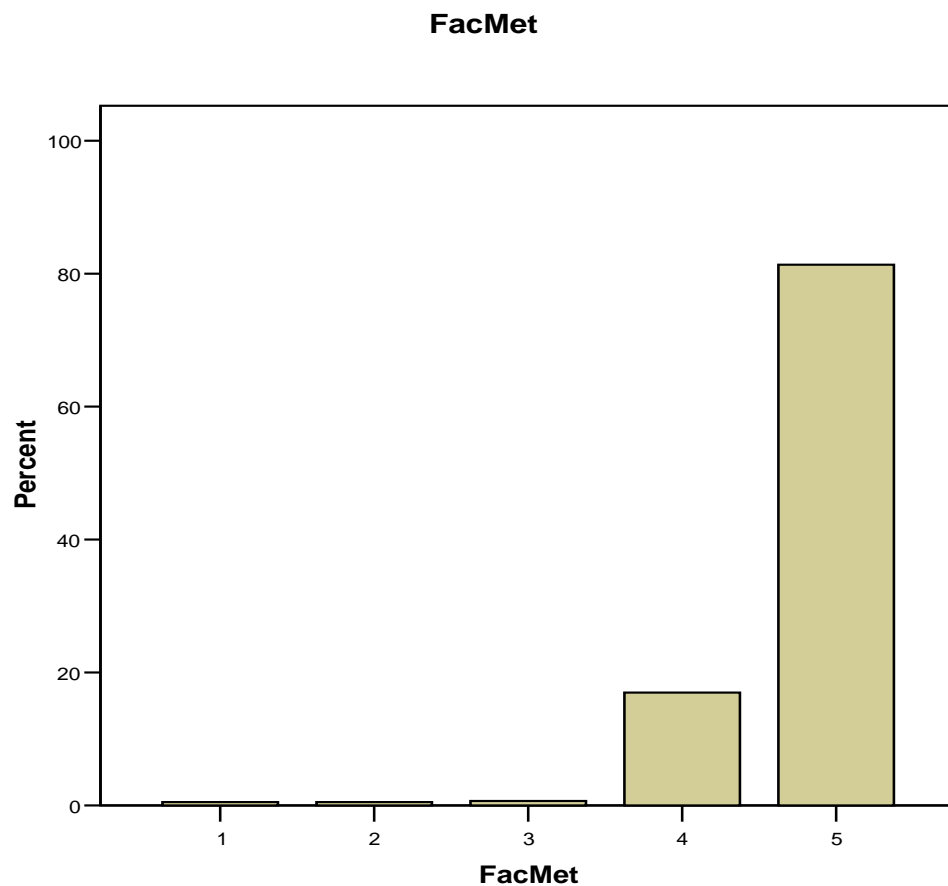|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	.5	.5	.5
	2	9	.5	.5	1.0
	3	12	.7	.7	1.7
	4	303	16.9	17.0	18.7
	5	1452	81.2	81.3	100.0
	Total	1785	99.8	100.0	
Missing	System	3	.2		
Total		1788	100.0		

FacMet

Figure B19. The training facilities overall met my needs and expectations.

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