COMPUTER-BASED EXAMINER TRAINING & CERTIFICATION PROGRAM

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16. Abstract

State motor carrier compliance officers, also referred to as safety inspectors, face expanded job duties at a time when there is a critical shortage of qualified and trained personnel. Safety inspectors must not only understand the extensive federal regulations set forth by the Federal Motor Carrier Safety Administration (FMCSA), but must apply that knowledge using the North American Standard Out-of-Service criteria during a vehicle inspection, and know when a myriad of "exceptions" to the regulations occur based on the type of vehicle being inspected.

Additionally, safety inspectors must constantly adapt to the ever-changing regulations due to "interpretations" by court rulings, as well as new security and anti-terrorism laws passed by the federal government since 9/11. Furthermore, safety inspectors must spend time training and sharing their knowledge and experiences to newcomers in the field. In order to enhance this training, the Florida Department of Transportation (FDOT) funded a research program between the University of Central Florida's (UCF) Center for Advanced Transportation Simulation Systems (CATSS) and the Institute for Simulation and Training (IST). The program is sponsored by the Florida Motor Carrier Compliance Office (FMCCO). This team is designing an innovative program to assist the training and recertification of novice and experienced safety inspectors, as well as federal agents.

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During 2005, IST designed an innovative system to teach safety inspectors how to apply regulations, exceptions, and out-of-service criteria during a Level I Inspection. The program is designed to be used in conjunction with the current safety inspector training program, with the goal of lowering course failure rate and improving on-the-job performance. The program comprises web-based lessons with training scenarios and job aids that are engaging and allow safety inspectors to become familiar with systems they will need to inspect to determine if a vehicle complies with the Federal Motor Carrier Safety Administration’s regulations.</td></tr>
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Executive Summary

The problems addressed with this research concern the shortage of state motor carrier compliance officers, also referred to as safety inspectors. This is critical because the job duties of these officers have expanded at a time when we are experiencing an extreme shortage of qualified and trained personnel.

The current training for these inspectors involves traditional teaching methods that demand a thorough understanding of the extensive federal regulations set forth by the Federal Motor Carrier Safety Administration (FMCSA). In addition to learning thousands of complicated regulations written in legalese, safety inspectors must apply that knowledge using the North American Standard Out-of-Service criteria during a vehicle inspection, and they must know when "exceptions" to the regulations occur. Regulations, out-of-service criteria, and exceptions change based on the type of vehicle they are inspecting. This standard teaching model currently is experiencing a 21% failure rate.

Training also requires safety inspector to adapt constantly to changes in the regulations. This can happen due to "interpretations" by court rulings, or new laws. For example, today's safety inspectors must be aware of new laws passed by the federal government since 9/11 that deal with security and anti-terrorism. Furthermore, training requires experienced safety inspectors to sharing their knowledge and experiences with newcomers in the field. The job performance of a safety inspector includes extensive and complex knowledge and skills yet the current training system is not fully preparing inspectors for success.

In order to enhance this training, the Florida Department of Transportation (FDOT) Research Office funded a research program between the University of Central Florida's (UCF) Center for Advanced Transportation Simulation Systems (CATSS) and the Institute for Simulation and Training (IST). This program is sponsored by the Florida Motor Carrier Compliance Office (FMCCO). This team is designing an innovative program to supplement the training and recertification of novice and experienced safety inspectors, as well as federal agents.

The new training program has these objectives:

- Preparing safety inspectors, both novice and experienced, to perform safety inspections thoroughly so that we are all safer on our roads
- Minimizing failure rate of students by providing them with supplemental individualized training on topics or skills in which they show weaknesses, while offering the opportunity for additional practice
- Making the class more effective and learner oriented
- Building a system that not only trains but provides job aids to all personnel involved in the inspection process
- Building a system that is robust, engaging, and easy to use.

Because we will not complete the program until the second year of the contract, initial findings are limited to the iterative formative evaluation process or subject matter review. Until we can set up a test situation with a control group and an experimental group, we will not know if we have met our objectives.

However, we have shown our current work to subject matter experts, sponsors and potential students. Based on their positive response, the UCF team believes that the Computer-based Safety Inspector Training and Certification Program has the potential to improve and enhance the training and recertification of safety inspectors, higher-ranked officers, and federal agents.

Potential benefits from this new training system include providing a simulation of an inspection that allows trainees to study commercial motor vehicle mechanical parts and practice doing an inspection before they train in the field. With practice scenarios, quick reference aids, simulated walk-around inspections, and thoughtful questions in an online web environment, students will experience learning that enhances the traditional teaching and memorizing. They can study photos of separated brake linings, brake lights that do not function, and a variety of non-compliant problems and test their knowledge. Later, when novices receive training in the field, their experienced mentor/trainer should not have to spend as much time with them. They already know what pieces and parts look like, where these pieces and parts exist on a commercial motor vehicle (CMV) how each works, and what to look for during an inspection.

In addition to online training that is realistic and engaging, the program contains quick reference tools so that inspectors do not have to memorize regulation numbers and out-of-service definitions. They can use a laptop computer or hand-held device to retrieve regulation numbers and out of service definitions by typing in the non-compliant issues they discover during an inspection.

Currently, the reaction and formal feedback from representatives of the FMCCO community is supportive and enthusiastic about the opportunity this program provides. We hope that state and federal government will adopt this blended learning intervention. With the increased amount of traffic on the roads, as well as potential terrorist threats involving CMVs, safety inspectors must identify potential safety hazards in an accurate and efficient manner. An effective Computer-based Training (CBT) program along with an effective in-the-field job aid will greatly improve inspectors' abilities to conduct timely and accurate inspections. Additionally, higher ranked officers along with federal agents (who do not conduct weekly inspections) will have the opportunity to keep up with the latest regulatory changes and inspection procedures without having to leave their offices.

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Chapter One: Introduction

Background

State motor carrier compliance officers, also referred to as safety inspectors, must not only understand the extensive federal regulations set forth by the Federal Motor Carrier Safety Administration (FMCSA), but they must be able to apply that knowledge using the North American Standard Out-of-Service criteria during a vehicle inspection. In addition, they must recognize that each type of vehicle they inspect could fall under an "exceptions" to the regulations and therefore not be subject to the criteria.

Safety inspectors are also required to adapt to regulations that change due to "interpretations" by court rulings, as well as new security and anti-terrorism laws passed by the federal government since 9/11. Furthermore, safety inspectors must spend time training and sharing their knowledge and experiences to newcomers in the field at a time when there is a shortage of inspectors. These issues require innovative, performance-oriented training methods.

Currently in Florida, future safety inspectors attend the Motor Carrier Compliance Officer academy, located in Havana, Florida, for training in: policy and procedures, defensive driving, firearms qualifications, ethics and professionalism, defense tactics, etc. Included in the academy are two weeks of training on the federal regulations and North American Standards Inspection procedures associated with both the driver and the vehicle:

- Week 1—focuses on regulations associated with the driver (FR 393 Part A)
- Week 2—focuses on the regulations associated with the vehicle (FR 393 Part B).

Upon completion of Part A and B, students continue their academy training for six weeks before being transferred to their divisional field office to complete the 14-week Field Officer training program. The current program has a 21% failure rate, which is deemed unacceptable by Florida Motor Carrier Compliance Office (FMCCO). A contributing cause may be the six-week gap that students have between the Part A and B courses and graduation. This performance problem, as well as the Institute for Simulation and Training's success in developing training for other aspects of the transportation industry, is what initiated the contact between FMCCO and IST.

In response to these issues, Florida Department of Transportation (FDOT) decided to pursue different training techniques. Based on research activities at the University of Central Florida's (UCF) Institute for Simulation and Training (IST), FDOT funded a research program between CATTS and IST, and sponsored by FMCCO, to design and develop a computer-based safety inspector training and certification program. Research commenced into determining which training methods to use. Training needed to consider adult learner styles and it needed to include advanced learning technology techniques appropriate for the commercial driving community. The findings of the research led to an initiative to build web-based safety inspector training with virtual scenarios.

Hypothesis
The IST and FMCCO team hypothesized that a Computer-based Safety Inspector Training and Recertification Program will minimize the failure rate among novice safety inspectors, and improve on-the-job performance. It will also be a time- and cost-effective method for recertifying experienced safety inspectors as well as higher-ranked officers and federal agents.

Objectives
The objectives of this program include:

- Preparing safety inspectors, both novice and experienced, to perform safety inspections thoroughly so that we are all safer on our roads
- Minimizing failure rate of students by providing them with supplemental individualized training on topics or skills in which they show weaknesses, while offering the opportunity for additional practice
- Making the class more effective and learner oriented
- Building a system that not only trains but provides job aids to all personnel involved in the inspection process
- Building a system that is robust, engaging, and easy to use.

Program Structure
The Computer-based Safety Inspector Training and Certification Program is a supplement to the current Academy training which is organized in a traditional fashion along the lines of the current federal regulations. Due to the fact that the job focus is on vehicle inspections and the regulations are difficult to read and learn, the IST team took a different approach to training inspectors. Currently, inspectors have to sift through pages of regulations and out-of-service criteria. In many cases, inspectors have to use multiple resources at the same time to try to figure out whether a CMV is in compliance. The IST team organized the training program based on the inspection procedure and the mechanical systems and parts of the CMV, rather than the regulations. This organization better lends itself to training and on the job performance because it better simulates the true demands of the job.

First, trainees participate in the Level I Inspection process by virtually walking around the vehicle and learning the general parts they will need to inspect. Next, trainees are shown the different parts and systems of the vehicle, how each works, and how the regulations and out-of-service criteria apply to each. The trainees are required to complete virtual inspection scenarios to determine whether they know how to apply the regulations and out-of-service criteria during an inspection. The program is being designed so novice and experienced safety inspectors, as well as federal safety inspectors, can use the training materials as job aids during an inspection. This will help inspectors complete inspections more quickly and more accurately because they will not have to sift through books of regulations. Inspectors can use key words and a reference library to immediately find the information they need during an inspection.

The following is an example of how the current training is organized versus the training proposed by the IST team.

Figure 1: Current Breakdown of Lighting Section

Subpart B - Lighting Devices, Reflectors, and Electrical Equipment
393.9 - Lamps operable.
393.11 - Lighting devices and reflectors.
393.13 - Retroreflective sheeting and reflex reflectors, requirements for semitrailers and trailers manufactured before December 1, 1993.
393.17 - Lamps and reflectors -- combinations in driveaway-towaway operation.
393.19 - Requirements for turn signaling systems.
393.20 - Clearance lamps to indicate extreme width and height.
393.22 - Combination of lighting devices and reflectors.
393.23 - Lighting devices to be electric.
393.24 - Requirements for head lamps and auxiliary road lighting lamps.
393.25 - Requirements for lamps other than head lamps.
393.26 - Requirements for reflectors.
393.27 - Wiring specifications.
393.28 - Wiring to be protected.
393.29 - Grounds.
393.30 - Battery installation.
393.31 - Overload protective devices.
393.25 - Requirements for lamps other than head lamps.
393.26 - Requirements for reflectors.
393.27 - Wiring specifications.
393.28 - Wiring to be protected.
393.29 - Grounds.
393.30 - Battery installation.
393.31 - Overload protective devices.
393.32 - Detachable electrical connections.
393.33 - Wiring, installation.

The IST team redesigned the lighting section based on the parts of the lighting system. This enables the user to easily find the problem they are encountering and all the regulations and out-of-service criteria that apply to that particular problem

Figure 2: New Breakdown of Lighting Section

The Lighting System

- Overview
- Headlamps
    - Overview
    - Regulations
    - Out-Of-Service Criteria
    - Exceptions
    - Practice Scenarios
- Turn Signals
    - Overview
    - Regulations
    - Out-Of-Service Criteria
    - Exceptions
    - Practice Scenarios
- Identification Lamps….
- Clearance Lamps….
- Side Marker Lamps….
- Etc.

Chapter Two: Research Review

In 2003, the UCF/IST team attended a conference in Sarasota, with the intention of displaying the Virtual Check Ride System (VCRS), which is another research project being conducted by UCF. During the conference, Lt. Col. Binder of the Florida Department of Transportation Motor Carrier Compliance Office approached the team. Lt. Col. Binder expressed interest in the Walk-Around Inspection portion of the VCRS and in how to redesign for safety inspectors rather than the traditional CMV driver. By reviewing previous research on vehicle inspection training conducted by Commercial Vehicle Safety Alliance (CVSA), Transportation Review Board and research done for the VCRS, the UCF/IST team gained a better understanding about how to apply the VCRS vehicle inspection to safety inspectors training.

Leveraging from the Virtual Check Ride System (VCRS)
IST developed the VCRS (a computer/web-based training system) to train and recertify CMV drivers. The VCRS allows CMV drivers to demonstrate that they possess the knowledge and skills required to operate a commercial motor vehicle successfully and safely. Because VCRS is a simulator, it allows drivers to take an actual state-conducted, federally-mandated Commercial Driver's License test from the comfort and safety of a computer and simulator. The test requires students to complete a multiple-choice state-mandated CDL knowledge test, a "virtual" vehicle walk-around inspection, and a simulator-based road skills test, all while receiving immediate performance feedback.

FMCCO saw an opportunity to leverage the "virtual" walk-around portion of the VCRS and use it to train and recertify safety inspectors to prepare them for conducting a Level 1 Inspection using the federal regulations and North American Standard Out-of-Service criteria. Clearly, training students using the current traditional classroom-based lecture wasn't effective due to the 21% failure rate. Neither was eliminating the Part A and B courses. FMCCO decided that testing a web-based training program in conjunction with the Part A and B courses and in conjunction with field training, would help "enhance" students' learning experiences and their on-the-job performance.

Traditional CVSA Safety Inspector Training Courses
Additionally the IST team researched the Web to see if there were other web-based training applications for the training and certification of Safety Inspectors. This type of training was not found, which gave the IST team a perfect opportunity to create something unique and innovative. Currently, safety inspector training is conducted by CVSA instructors and done in a very traditional sense in a classroom setting. Research on the Virtual Check Ride System suggests that complex skills can be taught via the World Wide Web and by means of simulation. The current Walk-around Inspection of the VCRS was studied and deemed too difficult for truck drivers to complete due to its complex nature. By creating an offshoot of the Virtual Walk-Around Inspection, and gearing it toward Safety Inspectors (Level I Inspection), a complex set of knowledge and skills could be taught in a more cost-effective manner than is currently being done.

By studying the safety inspector training courses set forth by CVSA, as well as the innovative methods being used to train truck drivers through the VCRS, the Computer-based Safety Inspection Training and Certification Program was created. This program combined the lessons learned from the VCRS training with the teaching provided through the traditional classroom-based courses taught by CVSA to create an innovative method to train safety inspectors on how to apply the Federal Regulations and North American Standard Out-of-Service criteria during a virtual Level I inspection of a commercial motor vehicle.

Chapter Three: Methodology

Program Design

Based on the performance requirements, the Computer-based Safety Inspector Training and Certification Program will be designed as follows:

Course Section #1: Diagnostic Test. Multiple choice questions as well as virtual Level 1 Inspection scenarios will determine the strength and weakness areas (in terms of knowledge and skill achievement) of experienced inspectors as well as federal agents. Based on learners' scores and results, individualized training plans will be developed to help improve their skills.

Program Section #2: Training. This section of the program is designed to enhance what the novice inspectors will learn in the Part B course, Field Training Officers' (FTO) program, as well as what they will experience in the field. The novice inspector will learn the mechanical functions of the different systems of a CMV, as well as how to apply the federal regulations, North American Standard Out-of-Service Criteria, and exceptions during a Level 1 Inspection. Due to the complexity of the federal regulations, the information is paraphrased and broken down into easily readable chunks. Learners have the opportunity to practice virtual inspections, while receiving immediate feedback if they make mistakes. Experienced inspectors, however, may not necessarily go through the entire training section. Based on their results from the diagnostic test, they will only take the portions of the training in which they were deficient.

Program Section #3: Virtual Scenarios. The virtual scenarios are almost identical to the diagnostic test. Once the safety inspectors have completed their training, they will complete a full Level 1 Inspection of various types of commercial motor vehicles. Upon completion of the scenarios, they will receive feedback on their strengths and weaknesses. Inspectors must obtain an 80% passing grade for each attempted scenario. For example, if an inspector receives a 90% on the lighting system, and a 75% on the steering system, he or she will receive remediation but only on the portion failed. The inspector must go back through the training on the steering system, and then retake the test.

Program Section #4: Reference Library. The Reference Library will be used by both novice and experienced safety inspectors while they are on the job. Rather than search through the large sections of federal regulations, North American Standard Out-of-Service Criteria, and other reference documents, inspectors may use a computer-based search engine to immediately find specific information on vehicle inspection points, the regulations, out-of-service criteria, and exceptions associated with these points. The reference library will help inspectors save valuable vehicle inspection time, which in turn will allow them to inspect more vehicles.

The IST and FMCCO team believe the Computer-based Safety Inspector Training and Recertification Program will minimize the failure rate among novice safety inspectors. It will also be a more time- and cost-effective method of recertifying experienced safety

inspectors as well as higher ranked officers and federal agents who are unable to perform weekly inspections.

Validation Study

Iterative Formative Evaluation
The iterative formative evaluation process is an informal method of continuously evaluating the development of a computer- or web-based training program. This process helps instructional designers and developers stay on track and constantly update changes to content based on SME and learner recommendations. These evaluation studies have been conducted on an informal basis with CVSA instructors, as well as experienced safety inspectors. These experts have provided continuous evaluation of materials produced by the IST team and determined whether the content is accurate and appropriate for the student audience. A formal validation with subjects will not be completed until the training program is completed and used in an operational setting. This evaluation will not occur until the second year of the project, which is now under contract. A description of the proposed experimental design is written in the following paragraph.

Control Group and Experimental Group
A traditional between-subjects design will be used for the validation of computer-based training (CBT) program in Year 2 of the contract. Comparisons will be made between those who received the CBT program and those who did not.

Group 1: Control Group. The control group will consist of year one students who receive no intervention at all. Because the scope of this project is to focus solely on Part B (vehicle requirements), subjects will take the traditional Part B course set forth by the FMCCO, and their class averages, as well as failure rates, will be recorded and used for comparison with Group II. During the 14-week FTO program, the same group will be assessed and scores will be noted. Due to the subjectivity of the current assessment techniques used during the FTO program, as well as the fact that the current assessment covers topics irrelevant to Part B, a more objective assessment will be designed that specifically covers Part B topics. Students' scores will be recorded using the new assessment.

Group II: Experimental Group. The experimental group will consist of year two students that do receive the intervention. These students will receive the Part B of the course in conjunction with the developed CBT program. Their class averages and failure rates will be recorded and compared to those of Group one. During the 14-week FTO program, Group II will have access to the CBT as a training and job aid. The same newly designed objective assessment will be used to record students' scores which will be compared with that of Group I.

Implementation:
Group I will proceed through the FMCCO traditional Part B course. Their failure rates and class averages will be noted. Demographic data will be collected on the group which will be used to make comparisons later.

Group II will proceed through the FMCCO traditional classroom courses as well, but it will also participate in the CBT program. Demographic data will be collected on the group and used for later comparisons. The instructor or a representative from IST will inform, discuss, and demonstrate the usefulness of the CBT at the beginning of the FMCCO academy, and require the students to complete the entire program by the end of graduation. This will give the students the opportunity to practice and apply the knowledge they gain during the Part B course before they even attend it. During the Part B course, the instructors will incorporate the CBT program and require students to complete the complimentary training sections. Should students be made aware of weaknesses, they can use the training program at their leisure as a tool for knowledge enhancement.

During the six-week downtime between the Part B class schedule and the 14-week FTO program, Group II students will be asked to use the CBT program to keep Part B training fresh in their minds in preparation for the FTO program. Their use of the training system will be recorded.

Group II students will then begin the 14-week FTO program, and will be required to use the CBT program as a training and job aid. Because all adult learners learn at different paces, the CBT will be used to assist students in topics they may have had difficulty with during a particular day of training.

Currently, a subjective assessment is used during the FTO program. It is the challenge of IST to develop an easily implemented standardized objective form for assessment. This form will rate student performance based on specific skills required to complete a Level I inspection of a CMV using the federal regulations and North American Standard Out-of-Service Criteria. The form will be developed after meeting with several subject matter experts (SMEs) to identify those assessment areas critical to the regulations learned in Part B of the students' coursework. Once the performance skills have been identified, a standardized form will be generated and used to assess the students' performance. This form will be used for both Group I and Group II of this research. The ratings will be compared to show differences in performance between the two groups.

In order to get a better understanding of how each group will be assessed, the following figure has been provided (Figure 1)

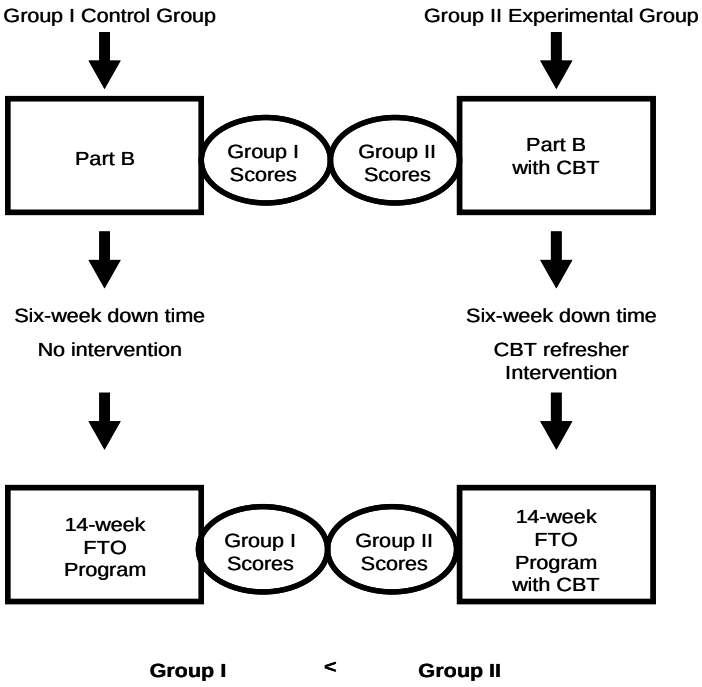

Figure 3. Group I versus Group II Intervention

Chapter Four: Findings

Because the experimental design won't be completed until the second year, initial findings are limited to the iterative formative evaluation process, or subject matter expert review. These finding are discussed in Chapter Five: Discussion. Findings will be added in Year 2 after data has been collected from the experimental design.

Chapter Five: Discussion

Iterative Formative Evaluation Discussion
During the analysis, design, and development phases of the program, subject matter experts and internal team members continually evaluated the content for accuracy and effectiveness. There have been three types of iterative formative evaluation thus far:

1. Internal review
2. Subject Matter Expert review
3. End-user review

Internal review has consisted of IST team members designing, creating and reviewing storyboards for consistency, proper instructional strategy, and proper program design strategy. Several team members, all with different backgrounds and experiences, attempt to understand the storyboards from a new learner's perspective. Team members share ideas based on individual strengths and weaknesses in an attempt to make the storyboards more effective as learning tools.

Subject Matter Expert review has consisted of safety inspectors reviewing raw content for proper accuracy and scope. After each storyboard has been reviewed internally by IST team members, the storyboards are sent out to safety inspector to review. Due to the complex nature of the content, SMEs also make in-house visits to review storyboards page by page. IST team members then incorporate the corrections and suggestions set forth by the SMEs, and then send the storyboards out for final review before development for on the World Wide Web.

End-user review took place during the Part B class in Havana, Florida. Although the storyboards were in draft form, students going through the Part B class reviewed the storyboards on the Lighting System and made suggestions or offered ideas. Students and instructors both liked the idea that the regulations were being re-written in a way that was less difficult to understand. Additionally, students had strong opinions about learning how to "apply" the regulations through inspection and by breaking CMV systems down into their critical parts, rather than reading through a book of regulations and trying to memorize them. Students, as well as experienced safety inspectors, also voiced a strong need for a reference library. The reference library would help them quickly and accurately access information on inspection areas in which they are weak, and then take the correct course of action.

Experimental Design Discussion: Predicting Possible Outcomes
It is expected that Group II will have significantly lower rate of failure and significantly higher end-of-course averages. With these positive results, the web-based training program will be shown as an effective complement to the FMCCO's Part B training course. If shown effective, it can easily be adopted into the FMCCO's training system and made available to all safety inspectors going through the program. Furthermore, it is expected that the FTO assessment scores for Group II will yield higher performance ratings than those of Group I. This difference in performance will further support that the CBT program in conjunction with the traditional classroom-based instruction increases

human performance and provides individuals an effective and efficient way to access regulation information.

However, there are several possible confounds that could affect the positive outcome of the program. First, the current Part B final exam assesses knowledge in areas that we believe do not contribute to the improvement of Level I inspection skills. Regardless of whether students use the CBT, it may not have a significant effect on the outcome of the Part B exam scores, and thereby may not reduce failure rate. Many traditional classes along with the testing methods used are not oriented to adult learners. Instructors focus more on rote memorization of knowledge rather than the application of skills. If the current exam does not measure the most critical requirements associated with becoming an effective safety inspector, the exam is not a good indicator of how the safety inspector will do in the FTO program or in the field. Another possible confound that could affect the positive outcome of the program is student demographics. Depending on the students' backgrounds (age, sex, experience with CMVs, education, ability to use a computer), Group I and Group II may differ greatly from each other and from the typical safety inspector that graduates from the program. This could possibly affect the assessment scores and graduation rates associated with each group. Detailed demographics must be collected from each group and compared to see how similar the groups are.

One other possible problem stems from the fact that for legal reasons, we may not be able to implement the experimental design in its current form. There may be legal issues with providing some students a method to improve their inspection skills while not providing that opportunity to others. This may give some students an unfair advantage for advancement. Other avenues of implementation are being considered to avoid this problem

Chapter Six: Conclusions

Based on the positive response from Subject Matter Experts, sponsors, and potential students, the IST team believes that the Computer-based Safety Inspector Training and Certification Program has the potential to greatly improve the training and recertification of safety inspectors, higher-ranked officers, and federal agents. Currently, the FMCCO community is very supportive and excited about the opportunity this program provides. The goal is to implement this program with the hope that states, as well as the federal government, will adopt this blended learning intervention. With the increased amount of traffic on the roads, as well as potential terrorist threats involving CMVs, safety inspectors must identify potential safety hazards in an accurate and efficient manner. An effective CBT program along with an effective in-the-field job aid will greatly improve inspectors' abilities to conduct timely and accurate inspections. Additionally, higher ranked officers along with federal agents (who do not conduct weekly inspections) will have the opportunity to keep up with the latest regulatory changes and inspection procedures without having to leave their office.

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Articles or Abstracts written:

Abstract prepared for 2005 TESI conference. Building on the Advanced Distributed Learning (ADL) initiative and the concepts of re-usable content objects, the abstract describes a web-based training program that is being designed to train motor carrier compliance officers on mechanical and regulatory safety compliance.

A Computer-Based Safety Inspector Training and Certification Program

Paper prepared for 2005 International Bus and Truck Safety and Security Symposium. Building on the work we have done for the computer-based safety inspector training and certification program, the abstract describes the need for a computer-based commercial vehicle safety inspector training program and the best methods of training to improve safety inspector performance. Based on findings of prototype application, the paper will describe what revisions are needed to improve the training program

Signed statement that the paper went through an editorial review