



Research Report 2023

Instructor Leader Assessment Program: Assessment Methods and Approaches

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September 2018

**United States Army Research Institute
for the Behavioral and Social Sciences**

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REPORT DOCUMENTATION PAGE

1. REPORT DATE (dd-mm-yy) April 2018		2. REPORT TYPE Final		3. DATES COVERED (from. . . to) Sep 2015 to Feb 2018	
4. TITLE AND SUBTITLE Instructor Leader Assessment Program: Assessment Methods and Approaches				5a. CONTRACT OR GRANT NUMBER W5J9CQ-11-D-0001-0021 W5J9CQ-11-D-0004-0014	
				5b. PROGRAM ELEMENT NUMBER 622785	
6. AUTHOR(S) David R. James, Courtney Dean, Camilla C. Knott, Martin L. Bink, Jennifer S. Tucker				5c. PROJECT NUMBER 790	
				5d. TASK NUMBER 33	
				5e. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Northrop Grumman Corporation Aptima, Inc. 3565 Macon Road 12 Gill St. Suite 1400 Columbus, GA 31907 Woburn, MA 01801				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U. S. Army Research Institute for the Behavioral & Social Sciences 6000 6 th Street (Building 1464 / Mail Stop 5610) Fort Belvoir, VA 22060-5610				10. MONITOR ACRONYM ARI	
				11. MONITOR REPORT NUMBER Research Report 2023	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited					
13. SUPPLEMENTARY NOTES Contracting Officer's Representative and Subject Matter POC: Dr. Jennifer S. Tucker					
14. ABSTRACT (<i>Maximum 200 words</i>): The objective of this research was to develop prototype assessment methods and tools to measure Soldier attributes demonstrated while performing Army tasks. In July 2014, the Maneuver Center of Excellence (MCoE) requested that the United States Army Research Institute for the Behavioral and Social Sciences (ARI) coordinate with and develop a research program to support a new pilot program designed to implement an Army Talent Management initiative, the Instructor Leader Assessment Program (ILAP). ILAP, initiated by the U.S. Army Armor School (USAARMS) and subsequently adopted by the United States Army Infantry School (USAIS), was designed as a two-day assessment of all newly assigned noncommissioned officer (NCO) instructors. Specifically, ARI was asked to assist in the refinement of established metrics and to develop new prototype metrics to include measures of the 21 st Century Soldier Competencies (DA, 2011). Following the operationalization of the attributes and establishment of the assessment criteria, digital assessment applications were developed for the Android operating system on hand-held tablet hardware. The applications were tested during multiple ILAP events, and the feedback by the evaluators and the NCOIC were used to refine the metrics and tools.					
15. SUBJECT TERMS: Talent Management, Talent Assessment, Instructor Assessment, 21 st Century Soldier Competencies, Mobile Applications, the Army Learning Model, Leader Competencies, Performance Assessment					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			Dr. Jennifer Tucker
			Unlimited Unclassified		19b. TELEPHONE NUMBER 706-545-2490

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ACKNOWLEDGEMENT

The authors would like to thank the senior leadership of the U.S. Army Armor and Infantry Schools (USAARMS and USAIS) for providing purpose, direction, and motivation for this research effort. The authors would particularly like to recognize CSM Michael S. Clemens, CSM Wilbert E. Engram, 1SG Russell J. Zachery, 1SG Gregory A. Craig, and MSG Gregg R. Smith for their professionalism and dedication to the success of this effort and the development of future Maneuver Center of Excellence instructors and students.

INSTRUCTOR LEADER ASSESSMENT PROGRAM: ASSESSMENT METHODS AND APPROACHES

EXECUTIVE SUMMARY

Research Requirement:

The objective of this research was to develop prototype assessment methods and tools to measure Soldier attributes demonstrated while performing Army tasks. In July 2014, the Maneuver Center of Excellence (MCoE) requested that the United States Army Research Institute for the Behavioral and Social Sciences (ARI) coordinate with and develop a research program to support a new pilot program designed to implement an Army Talent Management initiative, the Instructor Leader Assessment Program (ILAP). ILAP, initiated by the U.S. Army Armor School (USAARMS) and subsequently adopted by the United States Army Infantry School (USAIS), was designed as a two-day assessment of all newly assigned noncommissioned officer (NCO) instructors. Specifically, ARI was asked to assist in the refinement of established metrics and to develop new prototype metrics to include measures of the 21st Century Soldier Competencies (DA, 2011).

Procedure:

The research team instituted an iterative approach in support of ILAP. Through close coordination with the ILAP NCOIC, evaluators, and the USAARMS and USAIS CSM the research team observed multiple iterations of ILAP to determine an appropriate attribute assessment solution. First, a front-end analysis was conducted to determine the attributes of successful Army instructors. Prior research with the U.S. Army Sniper School became the foundation for defining the instructor attributes in support of ILAP. Second, observable behaviors for each attribute were developed and cross-walked with the ILAP events. Third, feedback was provided to the ILAP NCOIC to further refine the ILAP events to elicit the types of Soldier behaviors reflecting the attributes and facilitate their assessment by the evaluators. Fourth, multiple versions of paper/pencil evaluation sheets were piloted with the core group of evaluators, and the results were presented to the ILAP NCOIC. A 5-point sliding scale spread across equally divided segments of a bar scale was selected as the template for rating the attributes. This template was then used to design the digital version of the assessment tool. Fifth, the assessment applications were developed after the attributes were operationalized and the assessment criteria were established and were developed for the Android operating system on hand-held tablet hardware. An additional technology component consisted of a laptop with a database and a router providing a Local Area Network (LAN). This component was developed to store and maintain data collected by the Evaluator and NCOIC applications and provide server functions to deliver data to the CSM application.

Piloting the metrics involved a review-revise iterative process across multiple ILAP monthly assessments. Initially, the piloting process was conducted with one experienced evaluator and one research team member using the metrics to assess the same Soldier. Subsequent piloting efforts involved presenting iterations of the metrics to the evaluators while conducting training sessions prior to each ILAP assessment, observing the use of the metrics during the conduct of

the ILAP events, and gaining feedback from the evaluators at the end of the assessment day. Results of each iteration were used to refine the metrics based on evaluator feedback.

Findings:

At the completion of each of the five events, a comparison of results was conducted to determine whether or not the two evaluators could distinguish each listed observable behavior as well as assess the presence of the behavior with the proposed rating scale. A comparison was made between the ratings to determine rater-agreement. Interrater agreement was between 76% and 82% as identified in the initial and subsequent comparisons. Results from the initial pilot led to modification of the draft metrics, event situations, as well as identifying areas to include in the evaluator training.

Utilization and Dissemination of Findings:

In order to demonstrate the capabilities of a digital system to assess the Soldiers during the events and then provide timely, reliable data available for the CSM Boards, the research employed a spiral development process by which the content of the assessments was first developed via paper-pencil through observations of the existing assessment procedures, gathering requirements from the ILAP NCOICs, and piloting the assessments in parallel with the existing assessments with the support and assistance of trained evaluators. For example, during the piloting of both the paper-pencil and digital applications, evaluators, the NCOICs and CSMs were each given basic instruction prior to use of the respective applications. Instructions consisted of identification of the basic buttonology as well as indication of pop-up support messages that were programmed into the applications. During the ILAP events, members of the development team were on hand to support troubleshooting. Iterative prototypes of the Evaluator application were used at three successive ILAP events. The database, NCOIC and CSM applications were each used at two successive ILAP events (the Evaluator application was featured at these as well). During each of these tests, feedback was elicited from users. Immediately following the completion of the event evaluation, research team members informally asked the evaluator for their feedback. More formal interviews were conducted with groups of evaluators at the completion of the assessment day to collect feedback on the usability of the metrics. These sessions contributed to the revision of the metrics. Features were added, removed or modified to satisfy users' needs. The final versions of the applications and hardware necessary to support the assessment system were transitioned to the USAIS and USAARMS.

INSTRUCTOR LEADER ASSESSMENT PROGRAM: ASSESSMENT METHODS AND APPROACHES

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Background

The physical and cognitive environments of the future battlefield will require the Soldier to operate effectively under conditions of uncertainty and complexity while maintaining deep situational understanding (Dempsey, 2010; Department of the Army [DA], 2009). As a consequence, the Army has recently shifted its training strategies and model to one focusing on context-based, collaborative, problem-centered instruction rooted in Soldier and Leader adaptability (DA, 2011; DA, 2017). That is, the Army Learning Model emphasizes not only new training strategies but also new training outcomes. The 21st Century Soldier Competencies, as described in the Army Learning Model, represent training outcomes focused both on tactical and technical proficiencies and on adaptability, resiliency, and Leadership attributes (DA, 2011). Developing 21st Century Soldier Competencies in the Army requires instructors who possess, understand, and are able to develop these attributes.

Clearly, selecting instructors who can develop social and cognitive attributes in Soldiers and Leaders requires that the instructors possess different knowledge, skills, and abilities than those needed for training technical skills. Thus, the instructors also should be assessed and selected on possessing the 21st Century Soldier Competencies. Accurate assessment of the relevant attributes over time will enable the Army to better manage and employ its human capital. However, assessing an attribute such as “adaptability” involves a more sophisticated process than assessing content knowledge (e.g., Leighton, Gierl, and Hunka, 2004).

To support the assessment of the 21st Century Soldier Competencies and in support of the Army’s Talent Management Strategy (2016), the U.S. Army Armor School (USAARMS) initiated a program to assess and assign all non-commissioned officer instructors reporting to the schoolhouse. The Instructor-Leader Assessment Program (ILAP) was a two-day assessment event in which instructors assigned to the MCoE demonstrated proficiency on military occupation specialty skills, physical fitness, instructional ability, professional character, and Leader attributes. The Soldiers were assessed by cadre from the receiving courses. The assessments were based on the cadre’s professional opinions. The assessment results were then used as assignment input to the schoolhouse Sergeants Major.

Research Objective

The objective of this research was to develop prototype assessment methods and tools to measure Soldier attributes while performing Army tasks. In July 2014, the Maneuver Center of Excellence (MCoE) requested that the United States Army Research Institute for the Behavioral and Social Sciences (ARI) coordinate with and develop a research program to support a new pilot program designed to implement an Army Talent Management initiative, the Instructor Leader Assessment Program (ILAP). ILAP, initiated by USAARMS and subsequently adopted by the United States Army Infantry School (USAIS), was designed as a two-day assessment of all newly assigned noncommissioned officer (NCO) instructors. Specifically, ARI was asked to assist in the refinement of established metrics and to develop new prototype metrics to include measures of the 21st Century Soldier Competencies (DA, 2011).

Instructor Leader Assessment Program

The USAARMS and USAIS Command Sergeants Major (CSMs) identified the instructor as the lynchpin in the application of TRADOC policy and the professional development of students attending the courses within the MCoE. ILAP was developed to place the right Soldier in the right position within the MCoE such that the instructor or leader could most effectively contribute to the professional development of MCoE students and Soldiers based on his or her abilities and attributes. The CSMs, recognizing the limitations of the NCO assignment process, determined that they, along with the MCoE Brigade CSMs, needed to establish additional selection/screening criteria to enact a talent management process. Therefore, they conceptualized ILAP with a mission statement that read:

“...conduct monthly Instructor Leader assessments in order to allow MCoE senior leadership to effectively manage talent, assign the right individual to the right position, and develop leader attributes within the MCoE”. USAARMS Brigade Command Sergeants Major ILAP briefing.

The CSM further defined the program goals as:

- Assess Soldiers’ leadership attributes,
- Assess Soldiers’ levels of physical fitness,
- Assess Soldiers’ levels of military occupational specialty (MOS) skill,
- Assess Soldiers’ abilities to communicate in a professional format,
- Introduce combined arms maneuver,
- Determine Soldiers’ comprehensive aptitudes to instruct,
- Identify gaps in functional knowledge,
- Determine Soldiers’ placement within MCoE,
- Develop and implement plans to fill knowledge gaps, and
- Provide professional feedback.

From conceptualization to implementation, ILAP evolved into a series of psychomotor, cognitive, physical, and tactical events designed to assess the program goals and enable talent management.

ILAP structure. ILAP was a monthly two-day assessment composed of five (5) different events and a CSM board. The events were a combination of physical, psychomotor, and cognitive tasks designed to assess each Soldier’s skills and attributes, while the CSM board was an opportunity for the MCoE School and Brigade CSMs to interview each Soldier assigned as an instructor.

The assessment events were designed to assess Soldier skills and attributes across a series of military tasks inherent to the role of an instructor. Table 1 lists the skills and attributes assessed during a single event or across multiple events. The events begin at 0600 and culminated at approximately 1600, dependent on the number of Soldiers attending each month.

Table 1

Initial Skills and Attributes Assessed During ILAP Events

Soldier Skills	Soldier Attributes*
Land navigation	Comprehensive Fitness
Troop Leading Procedures (TLPs)	Confidence
MOS Skill / Professional competence	Adaptability & Initiative
Risk Management	Character & Accountability
	Critical thinking & Problem Solving
	Teamwork & Collaboration
	Communication and Engagement

Note: * These attributes are listed as 21st Century Soldier Competencies in TRADOC PAM 525-8-2 *The Army Learning Concept for 2015* (p. 41).

Each of the five assessment events had a physical fitness aspect that was designed not only to assess the Soldiers’ physical fitness levels but also to induce rigor during or prior to the assessment of a more cognitive or psychomotor task. The sequential nature of the physical events also were designed to increase physical fatigue over time as a test of the Soldiers’ propensities to be resilient. Table 2 lists the ILAP events and associated physical, cognitive, and psychomotor tasks.

Table 2

ILAP Event and Task breakdown

	Event 1	Event 2	Event 3	Event 4	Event 5
	Formation Run	Orienteering Course	Small Arms Proficiency	Individual Skills Run	Combined Arms Maneuver TEWT*
Physical Task	2.5-mile run at 8:00-8:30 min pace	4.5-6 mile course Push-ups Sit-ups Pull-ups Ladder climb	Foot march 1.5 miles at 15:00 min pace	1.5 mile run as fast as possible	Foot march 4.5 miles at 15:00 min pace
Cognitive or Psychomotor Task		Land Navigation	Small Arms Proficiency in an unfamiliar context	Weapons disassembly and assembly Instructional preparation and presentation Dynamic adaptation of instruction	Tactical mission brief

Note. * Tactical exercise without troops.

Soldiers were assessed by evaluators on a one-to-one or one-to-two basis. All evaluators held instructor positions within the MCoE, and evaluators were matched to Soldiers based on MOS. That is, if a 19D Calvary Scout was scheduled to attend ILAP, then a 19D Cavalry Scout instructor was assigned to be his evaluator. In cases where like MOSs were unavailable a more senior and experienced evaluator was assigned to that Soldier. The evaluators followed the Soldiers from event to event and assessed them on task specific items as well as during

preparation and recovery time. Evaluators used a pencil and paper evaluation form containing a series of binary (Yes/No) and free text questions crafted for each event. As stated previously, each event was designed to put the Soldier in a situation that would allow the evaluator to assess specific skills and attributes. Table 3 lists the skills and attributes evaluated during each event.

Table 3

Initial Skills and Attributes Assessed During Each Event

	Event 1	Event 2	Event 3	Event 4	Event 5
	Formation Run	Orienteering Course	Small Arms Proficiency	Individual Skills Run	Combined Arms Maneuver TEWT
Skills		Land Navigation	Risk Management	MOS Skill and Professional competence	MOS Skill / Professional Competence
Attributes	Comprehensive fitness Character Accountability Initiative	Comprehensive fitness Confidence Adaptability Problem Solving Risk Management	Comprehensive fitness Confidence Adaptability & Initiative Character & Accountability Critical thinking / Problem Solving Teamwork / Collaboration Communication and Engagement	Critical thinking / Problem Solving Character & Accountability Confidence Adaptability & Initiative	Critical thinking / Problem Solving Character & Accountability Adaptability & Initiative Confidence

Event situations. Event situations were designed to present ambiguous or unfamiliar contexts to allow for the evaluation of specific skills and attributes. For example, at the beginning of Event 2 the Soldier was handed a map of the area for the orienteering course. The map contained critical pieces of information but not in a format familiar to the Soldiers – the map displayed grid lines but no grid numbers. The Soldier was provided with an 8-digit grid coordinate to his current location, the grid coordinates for six stations he was required to navigate to, and a list of completion tasks for each station. This entailed problem solving to put the information into a familiar format, plot the grid coordinates to the six stations, use that format to navigate to each station, and complete the associated task. Soldiers unfamiliar with the solution ran the risk of getting lost, failing to complete the course in the time limit, taking risk and following another Soldier (who could also be lost), or admitting his weaknesses and seeking assistance from another Soldier. During this process, the evaluator watched and evaluated the Soldier on the actions he took.

Similarly, during Event four (4), at the completion of the individual skills run, the Soldier was given instructions to take five minutes and prepare a class on a familiar weapon system (M4 rifle or M240B machine gun) but to present the class as if “You were giving it to your Mother”. Soldiers were evaluated on their ability to recognize the target audience, determine the information that should be presented, adapt their communication style to ensure understanding, and maintain their professionalism when faced with a novice student.

Soldiers were cycled through each event to allow time for the evaluator to complete his assessment prior to moving on to the next event. After the completion of the fifth and final event, the evaluator returned the completed evaluation form to the ILAP Non-commissioned officer in charge (NCOIC).

During the initial pilot of the assessment program, USAARMS cadre identified the need for a better solution to assess the attributes. They invited our research team to review established metrics, observe the ILAP execution, and offer suggestions on how best to assess the attributes and present quantifiable results. The next section documents the iterative process accomplished in developing the procedures and metrics used to assess the Soldier attributes and to develop a feedback rubric.

Method

The research team instituted an iterative approach in support of ILAP. Through close coordination with the ILAP NCOIC, evaluators, and the USAARMS and USAIS CSM the research team observed multiple iterations of ILAP to determine an appropriate attribute assessment solution. Data were gathered using a set of prototype mobile collection tools. The following sections describe the process of observations, recommendations, and creation of the attribute definitions. Results from each step of the process were presented to the ILAP NCOIC for feedback and review.

Observations and Recommendations

The research team met with the MCoE CSMs and ILAP NCOIC to get a better understanding of the intent and metrics behind the ILAP assessment. During discussion of the ILAP metrics, it was identified that the initial method of assessment was heavily influenced by the assessment of the physical attributes (push-up, sit-up, pull up scores and foot-march times) of the Soldier with less attention paid to the intangible attributes. The USAARMS CSM indicated that while the physical assessments were an indication of the Soldier's physical strengths and weaknesses and did play a role in the decision-making process, those physical weaknesses could easily be improved, whereas without a more definable assessment of the attributes, he could not determine the best fit for the Soldier within the USAARMS.

After meeting with the USAARMS CSM, the research team was afforded the opportunity to observe multiple ILAP assessments. Members of the research team shadowed and observed the ILAP NCOIC as he conducted evaluator training prior to the assessment in addition to following, observing, and documenting evaluator and Soldier actions while conducting the assessment. We identified four critical points: (1) Approximately 50% of the evaluators were new each month; (2) events required modification to better assess the attributes; (3) attribute evaluation was restricted by the method (metrics) of assessment; and (4) existing feedback to the CSM board members primarily contained information regarding physical attribute scores.

Evaluators. The ILAP evaluators were incumbent instructors in courses throughout the MCoE and were requested to participate on a monthly basis. Evaluators, for the most part, are of

like MOS and rank of the Soldiers attending ILAP; that is, if a 19K Sergeant First Class is scheduled to attend ILAP for the month of May, then an evaluator of same MOS and same or higher rank is requested.

Research team members attending monthly evaluator training briefings identified that approximately 50% of the evaluators differed each month. Drilling-down into the reason why the evaluators differed each month, it was identified that competing demands of each course restricted the ability of units to provide the same instructors from month to month. Consequently, while conducting observations of the evaluators in-action, we identified a lack of standardization in the use of the metrics. Those evaluators who were more familiar with the metrics and had been involved with the pilot in July 2014 were more standardized in their actions and evaluations than those who were new to the process.

This led us to two conclusions: (1) in order to have comparable evaluations across Soldiers over time a more robust evaluator training process should be implemented and (2) any new metrics that was to be developed must be easy to understand and apply. These conclusions were discussed with the ILAP NCOIC and a process for implementation was agreed upon.

ILAP event modifications. The ILAP assessment consists of five different events: Formation Run, Orienteering, Small Arms Proficiency, Individual Skills Run, and a Combined Arms Maneuver exercise. Each event, except the Formation Run, was designed to present ambiguous or unfamiliar contexts to evaluate specific skills and attributes. By observing the execution of the events, the research team suggested minor modifications to the design of three of the five events (Small Arms Proficiency, Individual Skills Run, and the Combined Arms Maneuver exercise) that would enhance the situational cues and thus would enable the evaluators to better assess each attribute.

For example, the Small Arms Proficiency event required the Soldiers, in randomly assigned pairs, to apply existing knowledge (marksmanship fundamentals and coaching techniques) to an unfamiliar shooting event (Skeet Range with moving targets) while the evaluators assessed the attributes (Confidence, Adaptability & Initiative, Character & Accountability, Critical thinking / Problem Solving, Teamwork / Collaboration, Risk Management, and Communication and Engagement). In the initial design and execution of this event, the range NCOIC provided specific information on how to succeed during the event, thus Soldiers did not have to exhibit problem-solving, adaptability, or teamwork to perform well. The recommended design change was to limit the amount of information provided to the Soldiers. The range NCOIC was instructed to only review basic information regarding how a shotgun functioned (loading, safety) and range procedures (how many rounds to shoot and from where). This change in the amount of information the Soldiers received required the Soldiers to start communicating with each other and to figure out how they were going to accomplish the task. Similar recommendations were made to the ILAP NCOIC for the Individual Skills Run and Combined Arms Maneuver exercise.

Restricted attribute evaluation. As stated previously, the ILAP assessment consisted of five different events across an approximately 10-hour day with each event crafted to assess multiple skills and attributes. A parallel evaluation metrics (form), developed by the ILAP

NCOIC, was designed for each event. The initial metrics consisted of two parts. The first part was designed to document the results of the physical events, i.e., number of push-up, sit-up, and pull-up repetitions as well as total time for each foot march. The second part consisted of a series of Yes / No and free-text questions the evaluator should respond to while observing each Soldier during the event, see Figure 1. Through our discussion with the ILAP NCOIC, our observations of the evaluators, and our observations of the events we determined that while part one (1) of the metrics was deemed an appropriate method for documenting, aggregating, and quantifying the physical attribute results, part two (2) was insufficient and a different method of evaluating the competencies was required. Our recommendation of developing new assessment metrics was supported by the ILAP NCOIC.

<p>Event 1: Formation Run</p> <ol style="list-style-type: none">1. Was candidate early, on-time, or late?2. Was candidate in the appropriate uniform?3. Did the candidate have the necessary equipment?4. What was the candidate's demeanor?5. Does candidate use time to prepare for run?6. Did the candidate complete the run with the rest of the group?7. Does the candidate display any signs of extreme physical duress? <p>Comments & Observations:</p>

Figure 1. Example initial ILAP metric.

Defining the Attributes

In order to define the attributes we first conducted a literature review of military and academic sources and a search of corporate websites. It became clear that similar nouns were used as attributes but differed in description based on the context of core values; therefore, we needed to confine our search to attributes as defined within the U.S. Army core values. We focused our search on U.S. Army doctrinal and training publications, school programs of instruction (POIs), and research efforts and found differences between these publications. For example, Character, which “is a critical component of being a successful Army leader” (DA, 2015, para. 5-2), is defined differently between FM 6-22, *Leader Development*, and the United States Military Academy (USMA).¹ While FM 6-22 defines character as “one’s true nature including identity, sense of purpose, values, virtues, morals, and conscience” while adhering to the Army Ethic and Army Values (DA, 2015, p. 5-1), the USMA Gold Book defines character as internalizing West Point values (Duty, Honor, Country) and Army values coupled with honorable behavior across the social, moral, civic, performance, and leadership realms (p. 3). Based on these results we decided to refine our search and define the attributes in the context of military instructors.

Further, a review of military instructor-focused sources coupled with the results of an ongoing project resulted in an initial compilation of definitions for each of the attributes listed in Table 1 above. For example, Schatz et al. defined four great instructor performance categories –

¹During the timeframe that the project was being conducted, *The Army’s Framework for Character Development* developed by the Center for the Army Profession and Ethic, was not yet available (CAPE, 2017).

“leadership, communication, expert technique, and character” (2012, p. 3) – that were applicable. Similarly, TRADOC Regulation (TR) 600-21 *Noncommissioned Officer Education System Instructor Development and Recognition Program*, defined instructor competencies that were also applicable. We further refined the definitions during an ongoing project with the United States Army Sniper School (USASS). The impetus for the instructor evaluation stemmed from an effort to support USASS, where the purpose was to use the 21st Century Competencies to define and assess a “good instructor”. The USASS NCOIC listed those nouns that he determined as important – Technical Expertise, Professionalism/Character, Accountability, Adaptability, Initiative, and Communication and Engagement – and the research team strove to define and determine how to assess them.

The research team conducted numerous individual and focus group interviews with USASS instructors with the goal of defining what a “good instructor” looked like. The question “What makes a good sniper instructor” was presented in a way that allowed free responses not tied to specific nouns. The research team took the initial results and through an iterative process began to assign responses to nouns. These results were then presented to the USASS NCOIC and Team Leaders for feedback. These processes were repeated until USASS consensus was reached. For example, Table 4 lists the description – both positive and negative connotations – of the nouns Professionalism/Character as defined in the context of a “good sniper instructor” by the USASS leadership. This initial work with the USASS became the foundation for defining instructor attributes in support of the MCoE ILAP. Table 5 shows Character operationalized for ILAP assessment such that it lists the observable behaviors that could be expected from an Army Soldier participating in the ILAP events.

Table 4

Description of USASS Competency - Professionalism/Character

Professionalism/Character	
NCO Requirements	Approachable
Physically fit	Go-To Guy
Meets AR 600-9	Positive attitude
Meets DA PAM 670-1	Avoid off-colored conversations with students
Makes on the spot corrections	Socializes vs. works
Punctuality	Excessive swearing
Spot-light Ranger	Braggs on own accomplishments
Control of Emotions	Stubborn
Respectful of others values and opinions	Tactful in interactions with subordinates and peers
Shows frustration	Responds appropriately to feedback
Appropriately confident	Being honest about limits

Note. AR 600-9 refers to the *Army Body Composition Program*, and DA PAM 670-1 refers to the *Guide to the Wear and Appearance of Army Uniforms and Insignia*.

Table 5

Description of ILAP Attribute – Character

Character	
Is respectful of others’ values and opinions	Shows frustration
Has control of emotions	Is tactful in interactions with others
Makes excuses	Braggs too often on own accomplishments
Has a positive attitude	Excessively swears
Overcame personal limitations	Is honest with self and others about limits
Is appropriately confident	Responds appropriately to feedback

Further, in the process of defining the attributes and with the permission of the ILAP NCOIC and USAARMS CSM, in some cases we split pairs of attributes, e.g. Character and Accountability, into single attributes to better delineate between the two and determine if event situations needed to be adjusted to exercise each. Table 6 lists the attributes that were assessed during ILAP. Definitions for each can be found in Appendix A.

Table 6

Attributes Assessed During ILAP Events

Soldier Attributes
Instructional Skills
Comprehensive Fitness – Emotional Dimension
Confidence
Adaptability
Initiative
Character
Accountability
Critical thinking & Problem Solving
Teamwork & Collaboration
Communications & Engagement

USAARMS initial concept required evaluating multiple attributes across single and multiple events, as seen in Figure 1 above. The variation in the frequency of the assessments from event to event drove the metric development. Initially, a behaviorally anchored rating scale (BARS) was considered for each attribute. However, as BARS are primarily developed using critical incidents specific to job performance with the anchors written for each incident, a different measurement technique was developed as the ILAP assessments were focused on general behaviors across multiple dissimilar events with each behavior possibly contributing to multiple attributes.

The descriptors were further refined and worded as observable behaviors and crosswalked with the ILAP attributes (exemplar crosswalk in Figure 2; the complete attribute crosswalk table can be found at Appendix B). During this process we identified that certain observable behaviors could describe two or more attributes, for example, we determined that “Shows Frustration” could be a component behavior of Character, Adaptability, Confidence, and

Comprehensive Fitness – Emotional Dimension, therefore, we reviewed each observable behavior from this aspect and when appropriate assigned like behaviors to differing attributes. The resulting attribute definitions were compiled and presented to ILAP cadre for their feedback.

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Has control of emotions		✓	✓	✓	✓	✓		✓	✓			✓					
Makes excuses	✓	✓	✓	✓	✓	✓						✓	✓				
Has a positive attitude		✓	✓	✓	✓	✓		✓				✓					
Overcame personal limitations		✓	✓	✓	✓	✓						✓					
Gives up easily	✓	✓	✓	✓						✓			✓				
Is appropriately confident				✓					✓			✓					
Handles difficulties/challenges			✓	✓	✓					✓							
Waits to be told what to do	✓		✓	✓	✓						✓						
Shows frustration	✓		✓	✓				✓	✓	✓		✓					

Figure 2. Example crosswalk of observable behaviors to events and attributes.

During initial observations and in discussions with ILAP cadre we identified an additional attribute – Instructional Skills – that could be assessed based on the situations the Soldiers were placed in. We operationalized the definition using TR 600-21 and the specific situation crafted for each event. Table 7 lists the observable behaviors for Instructional Skills.

Table 7

Description of ILAP Attribute – Instructional Skills

Instructional Skills	
Uses appropriate vocabulary for subject matter	Provides accurate information
Confirms understanding	Emphasizes important points
Applies corrective measures	Gets to the point
Provides useful feedback	Paces presentation of material appropriately
Relates deficiencies to performance gaps	Sequences topics logically
Answers questions thoroughly and accurately	Summarizes major lesson points
Maintains composure when answering questions	Varies instructional approach to meet audience needs
Presents information clearly	

Figure 3 depicts the list of observables for the Instructional Skills attribute to Event 3 (E3), Small Arms Proficiency, Event 4 (E4), Individual Skills Run, and Event 5 (E5), Combined Arms Maneuver TEWT.

Instructional Skills		Events				
Observables	Reverse Scored	E1	E2	E3	E4	E5
Uses appropriate vocabulary for subject matter				X	X	X
Confirms understanding				X	X	
Applies corrective measures				X		
Provides useful feedback				X		
Relates deficiencies to performance gaps				X		
Answers questions thoroughly and accurately					X	X
Maintains composure when answering questions					X	X
Presents information clearly					X	X
Provides accurate information					X	X
Emphasizes important points					X	
Gets to the point					X	
Paces presentation of material appropriately					X	
Is respectful of others' values and opinions				X	X	X
Sequences topics logically					X	
Summarizes major lesson points					X	
Varies instructional approach to meet audience needs					X	

Figure 3. Crosswalk of the instructional skills attribute to the ILAP events.

Response Scale Development

The ILAP events were crafted to enable the evaluators to observe and assess each behavior while the Soldiers performed the requisite tasks. During the presentation of the class the evaluator would assess the Soldier based on the observables crosswalked to that event by marking an “X” on the bar scale for each observable behavior.

Event metrics were compiled into an ILAP evaluation form and presented to the ILAP NCOIC for review. Minor changes were incorporated based on changes to events, for example, event-specific questions were added to Event 4 (E4) and mission-specific questions were added to Event 5 (E5). Both sets of questions were added to standardize ratings across evaluators. The initial version of the evaluation form was then piloted during the execution of subsequent monthly ILAP events.

We presented multiple solutions, as seen in Figures 4 - 6, such as a simple Yes / No (equated to observed or not observed), and a bubble scale, numeric scales, and a sliding scale from high to low. We discussed the pros and cons of each scale keeping in mind that the ILAP NCOIC would have to score each evaluation sheet within a short timeframe prior to the CSM board. We piloted each scale with the core group of evaluators, presented the results to the ILAP NCOIC, and ultimately elected to use the sliding scale on the paper-based metrics in preparation for a future digital version of the assessment metrics which would also use a sliding scale.

Observable Behavior Measurement Scales									
	High				Low		Yes	No	N/A
Has a positive attitude	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Shows frustration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has control of emotions	2	1	0	-1	-2	Waits to be told what to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is appropriately confident	5	4	3	2	1	Continuously adjusts to the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Makes Excuses	-----					Handles adversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4. Examples of proposed measurement scales. Multiple scales were presented to the ILAP NCOIC for consideration.

Observables	High	Low	Observables	High	Low
Has a positive attitude	-----		Varies instructional approach to meet audience needs	-----	
Has control of emotions	-----		Provides accurate information	-----	
Makes Excuses	-----		Actively listens to peers and instructors	-----	
Handles difficulties/challenges	-----		Answers questions thoroughly and accurately	-----	
Waits to be told what to do	-----		Maintains composure when answering questions	-----	
Can break down the task	-----		Emphasizes important points	-----	
Has a command voice	-----		Gets to the point	-----	

Figure 5. Sample observable behavior scoring metrics for Event four (4).

Event 1 - Formation Run:			Go	No Go	
	Yes	No	Observables	High	Low
1. Was the Candidate on time:	<input type="radio"/>	<input type="radio"/>	Has a positive attitude	-----	
2. Was Candidate in correct uniform?	<input type="radio"/>	<input type="radio"/>	Has control of emotions	-----	
3. Candidate appeared nervous before the run	<input type="radio"/>	<input type="radio"/>	Makes Excuses	-----	
4. Does Candidate use time to prepare for run?	<input type="radio"/>	<input type="radio"/>	Overcame personal limitations	-----	
5. Does the Candidate display any signs of extreme physical duress?	<input type="radio"/>	<input type="radio"/>	Gives up easily	-----	
6. Did Candidate have the necessary equipment?	<input type="radio"/>	<input type="radio"/>			
7. What was the Candidate's demeanor?					

Figure 6. Sample observable behavior scoring metrics for Event one (1): Formation Run.

The evaluators were provided with assessment metrics that contained similar bar scales for each event. At the completion of the ILAP assessment a scoring template – Figure 7 – was used to determine a whole number score for each observable behavior. A 5-point sliding scale spread across equally divided segments of the bar scale was used within the template. Marks that appeared on the lines were scored at the next highest value, i.e., an “X” on the line between two (2) and three (3) was scored as a three (3). The results for each observable behavior were then entered into a formatted Excel™ spreadsheet for computation.

Observables	High					Low					
	5	4	3	2	1	5	4	3	2	1	
Has a positive attitude						Varies instructional approach to meet audience needs					
Has control of emotions						Provides accurate information					
Makes Excuses						Actively listens to peers and instructors					
Handles difficulties/challenges						Answers questions thoroughly and accurately					
Waits to be told what to do						Maintains composure when answering questions					
Can break down the task						Emphasizes important points					
Has a command voice						Gets to the point					

Figure 7. Sample observable scoring template for Event four (4).

The computations within the Excel™ spreadsheet summed the values for each observable behavior and divided by the number of values to yield an average score per attribute. Figure 8 depicts the process for summing and averaging the Instructional Skills attribute score.

Instructional Skills	Reverse Scored	Events					Total
		E1	E2	E3	E4	E5	
Uses appropriate vocabulary for subject matter				5	3	3	11
Confirms understanding				5	2		7
Applies corrective measures				4			4
Provides useful feedback				4			4
Relates deficiencies to performance gaps				2			2
Answers questions thoroughly and accurately					5	5	10
Maintains composure when answering questions					5	3	8
Presents information clearly					5	5	10
Provides accurate information					4	3	7
Emphasizes important points					3		3
Gets to the point					3		3
Paces presentation of material appropriately					4		4
Is respectful of others' values and opinions				5	5	5	15
Sequences topics logically					2		2
Summarizes major lesson points					1		1
Varies instructional approach to meet audience needs					1		1
Total							92
Count							25
Average							3.68

Figure 8. Attribute scoring example.

In some instances, prior to the computation of an attribute score, such as Makes Excuses, the values assigned to these observable behaviors were reversed within an Excel™ worksheet. Thus, higher ratings on these behaviors decreased the overall score attribute score.

ILAP Scorecard Development

Data analytics. Exemplars of automating the ILAP scoring process were developed with the goal of minimize the ILAP NCOIC’s workload and providing the CSM board members with the assessment results in a timely manner. While the scoring of the paper-based assessment metrics and input of observable scoring data could be conducted manually, an Excel™ spreadsheet was designed with UserForms as a first test of automating some of the data analytics.

Tabs were created for the physical events data entry, e.g. number of push-up repetitions or event start and stop times, as well as evaluation form questions and observable behavior scores. Data entered through the UserForms were used to develop an exemplar assessment report card for each Soldier. These report cards could be printed on a single sheet of 8.5 x 11 inch paper and provided to each member of the CSM board. Figure 9 depicts the UserForm developed for data entry of evaluation data; Figure 10 depicts the ILAP report card.

The screenshot shows a web-based form titled "ILAP Records" with several tabs: "Event Results", "E_1+2 Question Results", "E_3-5 Question Results", "E_1-3 Observables", and "E_4+5 Observables". The "Event Results" tab is active. The form contains the following fields:

- Name:
- Event 2 Ladder: Enter Go or NG
- Event 1 Run: Enter Go or NG
- Event 3 FM Start Time: Enter time e.g. 0930
- Event 2 Start Time: Enter time e.g. 0630
- Event 3 FM Stop Time: Enter time e.g. 1000
- Event 2 Stop Time: Enter time e.g. 0730
- Event 4 Task One (Map): Enter Go or NG
- Event 2 PU 1: Enter # of reps
- Event 4 Task Two (Medical): Enter Go or NG
- Event 2 PU 2:
- Event 5 FM Start Time: Enter time e.g. 1330
- Event 2 SU 1:
- Event 5 FM Stop Time: Enter time e.g. 1445
- Event 2 SU 2:
- Evaluator: e.g. SFC Smith
- Event 2 Pull Ups: Enter 0000 if a Soldier does not participate in a timed event.

A "Next Page" button is located at the bottom right of the form.

Figure 9. Exemplar event results with Userform.

Overall Tier Rating		Movement Tier		Physical Tier		Event 4 Map	Event 4 Medical				
Soldier	Peers	Soldier	Peers	Soldier	Peers						
3.50	2.94	3.50	3.25	3.50	2.88	1.00	5.00				
Running Tier		Push Up Tier		Sit-up Tier		Pull Up Tier		Ladder		Foot March Tier	
Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers
5.00	5.00	5.00	3.50	5.00	3.00	3.00	1.50	1.00	1.00	2.00	1.50
Attributes		Soldier		Peers		Soldier		Peers			
Instructional Skills		2.88	2.94	Accountability		4.34	4.34				
Comprehensive Fitness-Emotional		4.46	4.12	Risk Mitigation		4.67	3.67				
Confidence		3.75	3.75	Critical thinking/Problem Solving		3.71	3.79				
Adaptability		3.83	3.83	Teamwork/Collaboration		3.70	3.70				
Initiative		3.13	3.13	Communication and Engagement		3.44	3.58				
Character		4.15	4.15								

Figure 10. Exemplar ILAP report card.

Physical/Psychomotor Ratings. This section, depicted in Figure 11, contained the results from the ILAP physical and psychomotor tasks converted into a tier rating, color coded, and compared against the Soldier’s peers. Tier ratings ranged from 1 = low (red) to 5 = high (green), based on criteria appropriate to the task: a Go/No Go result (formation run, ladder climb, map task, and medical task); the number of repetitions²³ compared against the U.S. Army’s APFT tables for gender and age (push-ups and sit-ups); the number of repetitions compared against a table (pull-ups); or the total time compared against a table (foot march).

Overall Tier Rating		Movement Tier		Physical Tier		Event 4	Event 4				
Soldier	Peers	Soldier	Peers	Soldier	Peers	Map	Medical				
3.50	2.94	3.50	3.25	3.50	2.88	1.00	5.00				
Running Tier		Push Up Tier		Sit-up Tier		Pull Up Tier		Ladder		Foot March Tier	
Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers	Sldr	Peers
5.00	5.00	5.00	3.50	5.00	3.00	3.00	1.50	1.00	1.00	2.00	1.50

Figure 11. Exemplar physical tier ratings.

As an example, tier ratings for the push-ups and sit-ups were determined by overlaying a tier rating template on the scoring tables found within DA Form 705 *Army Physical Fitness Test Scorecard*. Tier ratings were based on a distribution of point values for each age bracket. Soldiers, within their age bracket, must score 60-points or greater to pass each event of the Army APFT (push-ups, sit-ups, and 2-mile run), therefore Tier 1 (failing) is equivalent to a point-score less than 60-points, tier 2 = 60 to 70-points, tier 3 = 70 to 80-points, tier 4 = 80 to 90-points, and tier 5 = 90 points or greater. Tier ratings were assigned to point values as a method of providing the CSM board members with familiar information for assessing the Soldier’s ability to pass an APFT. Table 8 is an extract from DA Form 705 that shows boxed point values for Soldiers from two different age groups with the same number of repetitions. The corresponding tier ratings for each age bracket and number of repetitions are depicted in Table 9. In this instance, a male Soldier in the age bracket of 17-21 years old, who completes 42 push-ups, attains 60-points and a GO for the event, and receives a Tier 2 rating. In contrast, a Soldier in the 42 to 46 age bracket would attain 73-points and receive a Tier 3 rating for the same amount of repetitions. Similar tables were used for the sit-ups, pull-ups, and foot march times.

² The Soldiers completed two 1-minute push-up and sit-up events. For comparison against DA Form 705 (APFT Score Card) the number of repetitions were averaged and divided by a pre-determined constant. For example, push-up repetitions of 35 and 32 are computed by $-(35 + 32) / 2 = 33.5$, $33.5 / .8 = 41.874 = 42$; 42 push-ups is the equivalent of 2-minutes of push-ups. A 30-year old man who completes 42 push-ups in 2-minutes is rated as a tier 2.

³ The push-up and sit-up constants (.8 and .63) were determined by documenting the number of push-ups and sit-ups completed within the first minute and then the second minute during an APFT conducted by the Senior Leaders Course on Fort Benning (similar demographic to those Soldier being assigned as instructors on Fort Benning). The conversion factor (constant) was determined by $\sum a / \sum b$, where a =first minute repetitions and b = second minute repetitions.

Table 8

Exemplar Extract of Point Values per Repetitions from DA Form 705 Scoring Table

Push-ups (Male)		Age Brackets					
Reps	17-21	22-26	27-31	32-36	37-41	42-46	47-51
37	53	57	58	61	63	68	74
38	54	58	59	62	64	69	75
39	56	59	60	63	65	70	76
40	57	60	61	64	66	71	78
41	59	61	62	65	67	72	79
42	60	62	63	66	68	73	80
43	61	63	65	67	69	74	81
44	63	65	66	68	70	76	82

Table 9

Example of the Push-up Tier Rating Table

Push-ups (Male)		Age Brackets					
Reps	17-21	22-26	27-31	32-36	37-41	42-46	47-51
37	1	1	1	2	2	2	3
38	1	1	1	2	2	2	3
39	1	1	2	2	2	3	3
40	1	2	2	2	2	3	3
41	1	2	2	2	2	3	3
42	2	2	2	2	2	3	4
43	2	2	2	2	2	3	4
44	2	2	2	2	3	3	4

While the tier ratings for each individual event were an indication of the Soldier’s physical attributes, the ILAP NCOIC also wanted a composite score for physical, movement, and overall tiers. To determine these tiers, the physical tier rating was computed by averaging the push-up, sit-up and pull-up tier ratings, while the movement tier rating was computed by averaging the running and foot march tier ratings. The overall tier rating was computed by averaging the physical and movement tier ratings. Peer median ratings were provided as a point of comparison for the CSM board members (above, below, or equal to). Peer median ratings were computed for each Soldier based on rank and MOS from historical data of all the Soldiers who had attended the ILAP since its inception.

Attribute Ratings. This section, depicted in Figure 12, contained the compiled results of the evaluator’s assessment of the Soldier across all five events converted into a rating, color coded, and compared against the Soldier’s peers. Ratings ranged from 1 = low (red) to 5 = high (green), and were based on the computations discussed below.

Attributes	Soldier	Peers		Soldier	Peers
Instructional Skills	2.88	2.94	Accountability	4.34	4.34
Comprehensive Fitness-Emotional	4.46	4.12	Risk Mitigation	4.67	3.67
Confidence	3.75	3.75	Critical thinking/Problem Solving	3.71	3.79
Adaptability	3.83	3.83	Teamwork/Collaboration	3.70	3.70
Initiative	3.13	3.13	Communication and Engagement	3.44	3.58
Character	4.15	4.15			

Figure 12. Exemplar attribute ratings.

ILAP Digital Data Collection Tools

To foster efficient and convenient data collection, mobile technology was introduced at the point of collection, analysis and maintenance of the data. The composition of the evaluation team drove the development of three mobile applications, each tied to a central database. The ILAP was conducted by three key facilitators: Evaluators, the NCOIC, and the CSM board. Evaluators were responsible for the bulk of collection and measurement capturing the ratings. The NCOIC provided executive management of the overall event and was responsible for capturing specific data (e.g., the timed run) when evaluators were distributed to specific stations. The members of the CSM board would ultimately review the results of the data collected.

ILAP Mobile Application Toolkit Development. The applications were developed after the attributes were operationalized and the assessment criteria were established and were developed for the Android operating system on hand-held tablet hardware. A fourth technology component consisted of a laptop with a database and a router providing a Local Area Network (LAN). This component was developed to store and maintain data collected by the Evaluator and NCOIC applications and provide server functions to deliver data to the CSM application.

Evaluator application. This application allowed the evaluators to rate each Soldier's performance during the one-day assessment program. The evaluators also could use the application to take videos, pictures, and voice-to-text notes of the Soldiers' behaviors and attach these data to the ratings of specific Leader Attributes and Expected Outcomes. The multimedia data provided both evidence and memory cues for the ratings made by the evaluators.

To make observations and assessments, the Observations function (with *Questions* and *Observables*) allowed the evaluators to consistently rate the Soldiers' performance across the five events. *Questions* were designed to capture information about the Soldiers' performance on the event's central task. *Observables* were designed to capture Leader attributes such as confidence, critical thinking, and problem solving skills. Prior to the start of Event 1, each evaluator had to set up the application by selecting *New Observation* at the dashboard, the Setup tab to enter the evaluator name, and the name of the Event 2 station, and the name(s) of the Soldier(s) assigned to the evaluator (Figures 13 – 16). The Event 2 station was the assigned physical tier station in which each evaluator rated all of the Soldiers for that particular event (pushups, sit-ups, etc.). For Events 1, 3, 4, and 5, each evaluator only rated the Soldier that was selected in the setup screen.

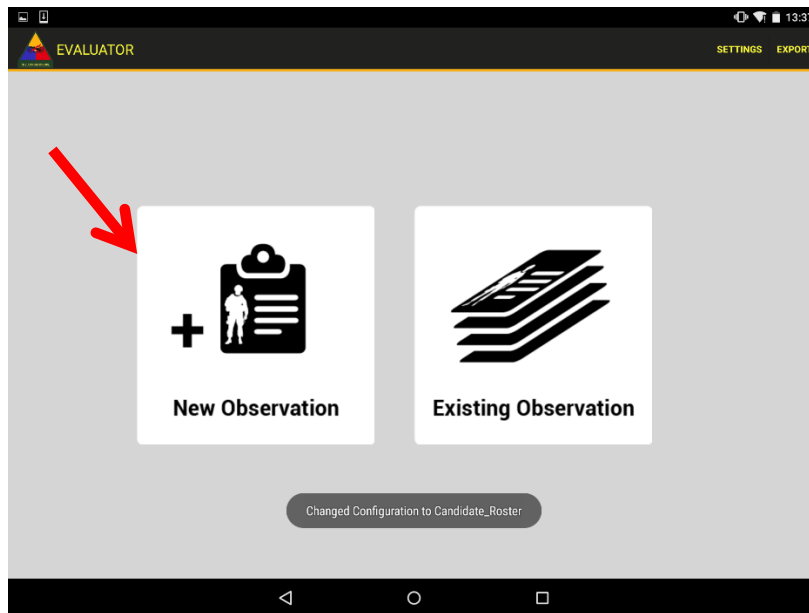
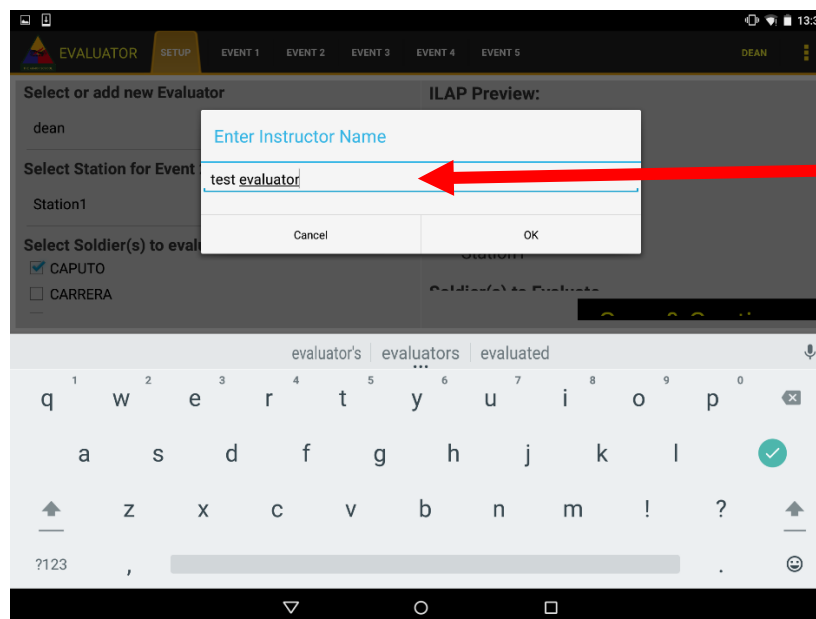


Figure 13. Step 1 of setting up the evaluator application to observe and rate Soldiers.



Evaluator name was entered here.

Figure 14. Step 2 of setting up the evaluator application to observe and rate Soldiers.

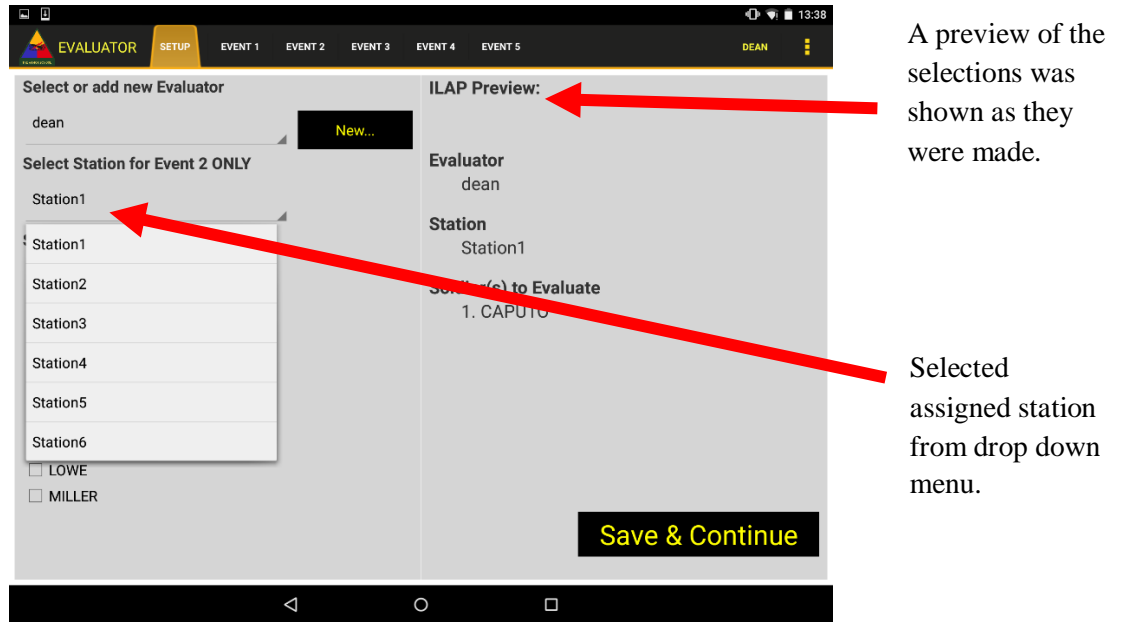


Figure 15. Step 3 of setting up the evaluator application to observe and rate Soldiers.

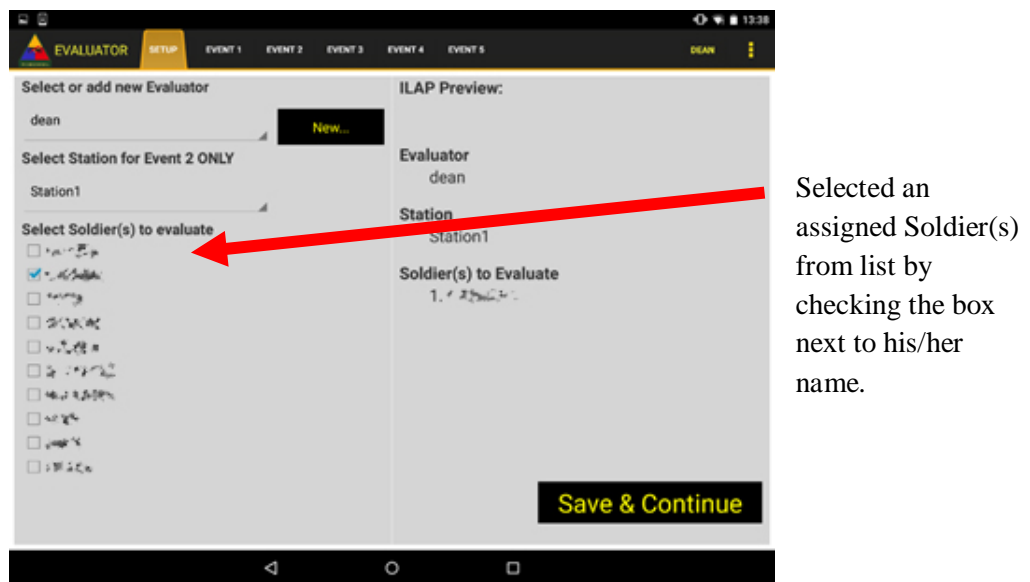
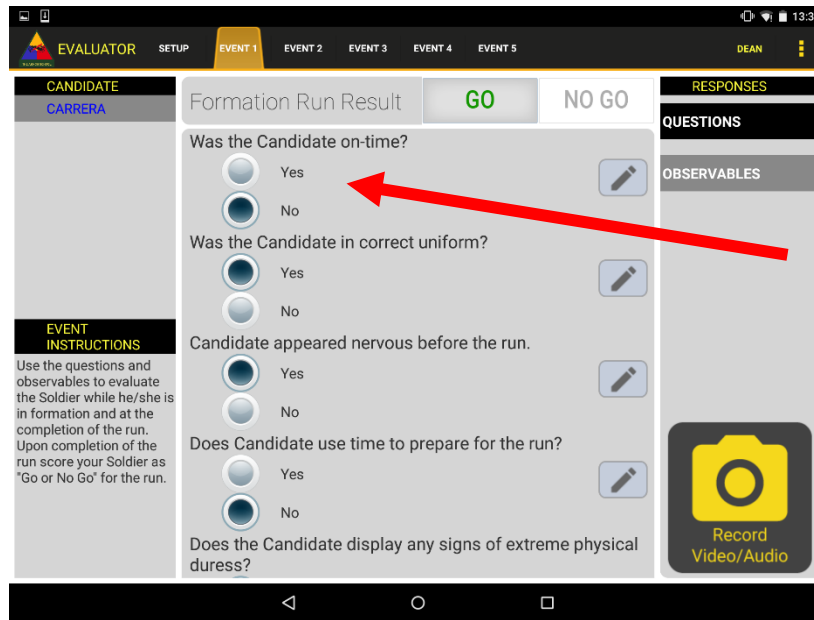


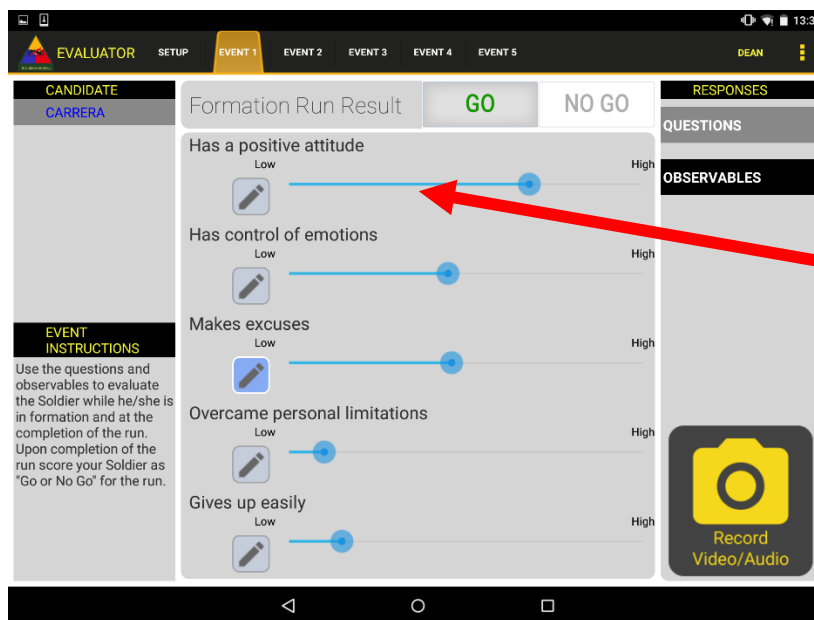
Figure 16. Step 4 of setting up the evaluator application to observe and rate Soldiers.

Evaluating Soldiers: For all five events, evaluators provided ratings for each of his/her assigned Soldier(s). *Questions* required yes/no and free-text responses, and *Observables* required a rating on a continuous scale from Low – High (Figures 17 and 18). Notes and multimedia could be linked to each question or observable as part of the assessment. In addition, each Soldier was given an overall *Go/No-go* assessment.



Provided a yes/no assessment for each question.
Included notes or multi-media as needed.

Figure 17. Exemplar evaluation questions.



Provided a rating on a slider for each observable.
Included notes or multi-media as needed.

Figure 18. Exemplar sliding bars to rate observable behaviors reflecting the attributes for each event.

Evaluating Soldiers during Event 2: For Event 2, each evaluator was assigned one station in which to assess all of the Soldiers (e.g., push up station, pull ups station). Each station required an additional entry indicating either number of repetitions completed or whether the task was not completed (Figure 19).

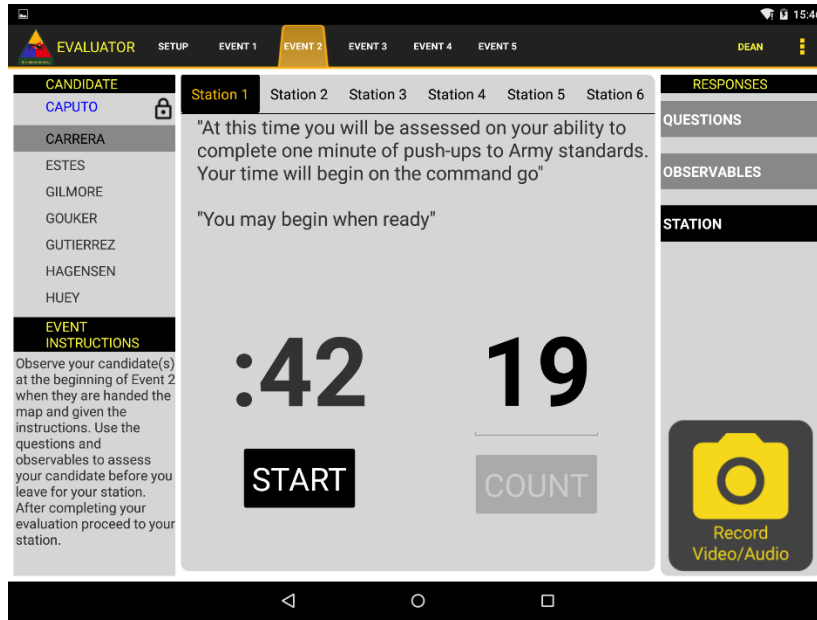
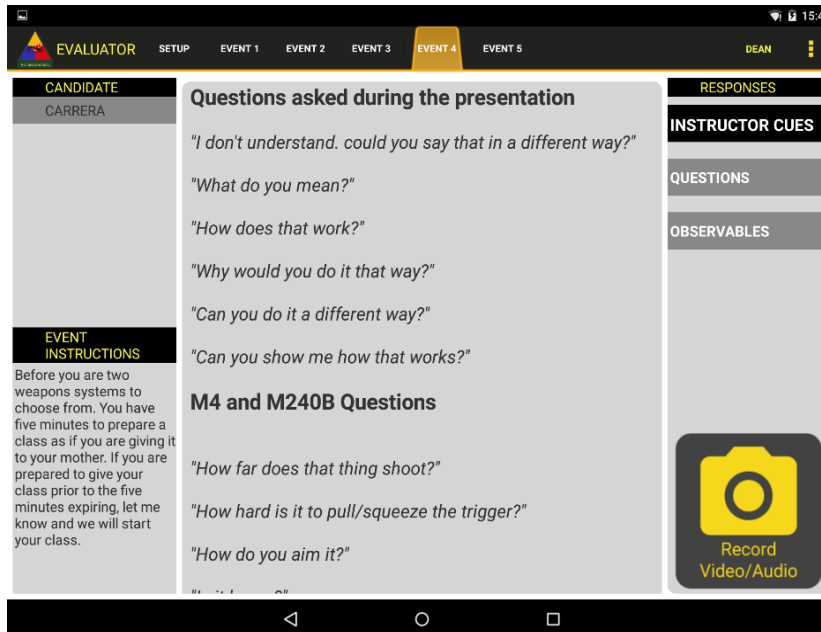


Figure 19. Exemplar evaluator input screen for Event 2: Station 1 (push-ups).

Evaluating Soldiers during Event 4. Event 4 included two subtasks that Soldiers completed prior to starting the main task of teaching “your mom” a class on a weapon. Once the Soldiers completed the two subtasks, the evaluators began their assessments of the “teaching” task. During that teaching task, the evaluators asked each Soldier specific questions (Figure 20). *Figure 20.* Evaluation questions for Event 4.



Saving an assessment. The evaluators' responses and data were saved automatically when the evaluator switched between tabs or when the tablet was put to sleep. The data also could be manually saved by exiting out of the observation (Figure 21).

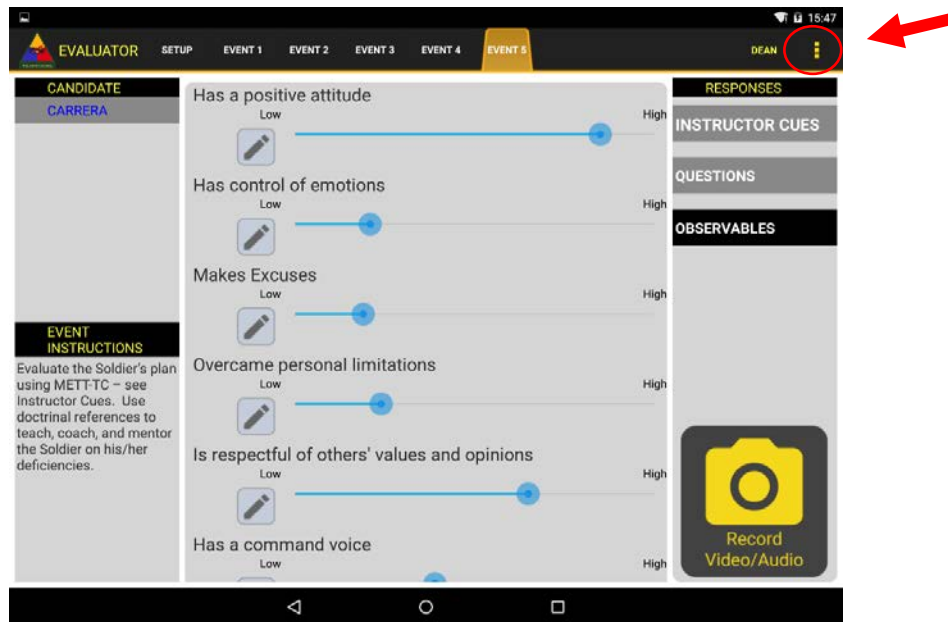


Figure 21. Exemplar of Event 5 menu to save the data and of Event 5 attributes.

Noncommissioned Officer in Charge (NCOIC) application. A NCOIC application was developed to capture times for the run and road marches. As such, the application only collects data from some of the ILAP events. Specifically, it serves as a timer for Events 1, 2, 3, and 5. For each of these events, the NCOIC is responsible for starting the timer for Soldiers at the start of the event and keep tabs on the elapsed time. The NCOIC application defaulted to Event 1. Instructions for the Soldiers appeared in a popup dialog box. These were read to the Soldiers prior to the start of the formation run (Figure 22).

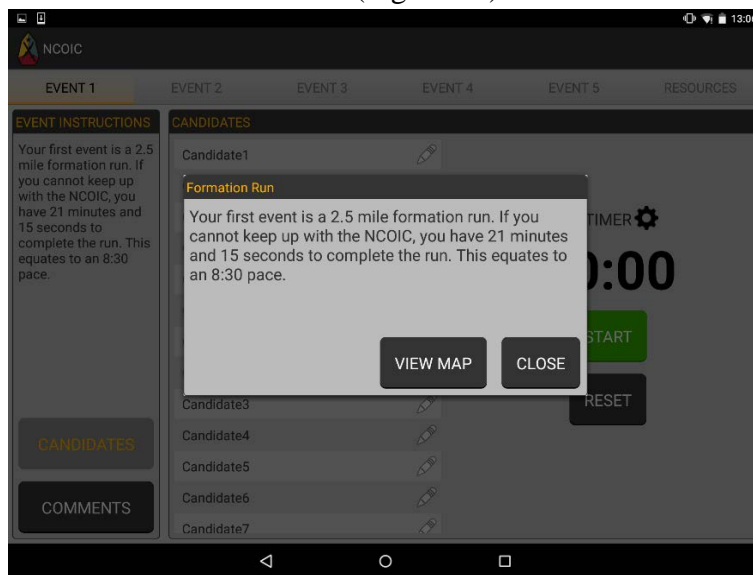
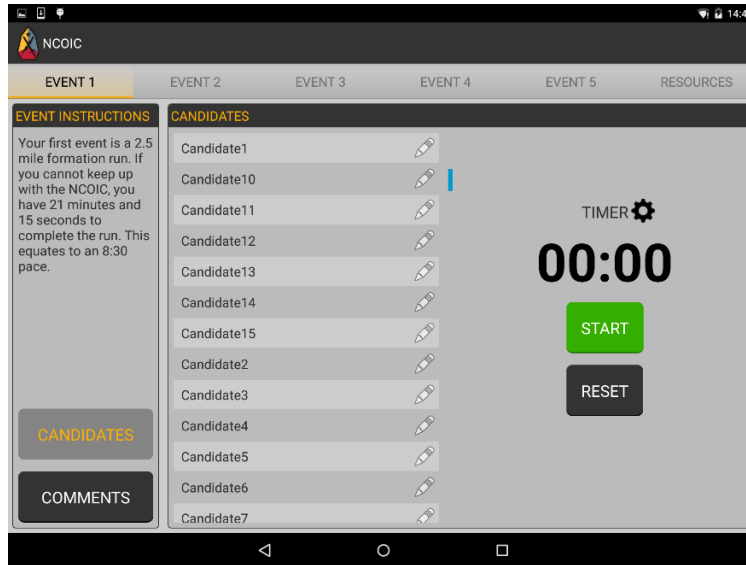


Figure 22. NCOIC application's instructions to the Soldiers.

After providing instructions to the Soldiers, the timer for the formation run was started. The timer will tick up from 0:00 to 21:30 and beyond, and an alarm could be set to sound at 21:30 alerting the NCOIC that the timing for the formation run had ended, and any Soldiers who had not yet finished should receive a No Go (Figure 23).



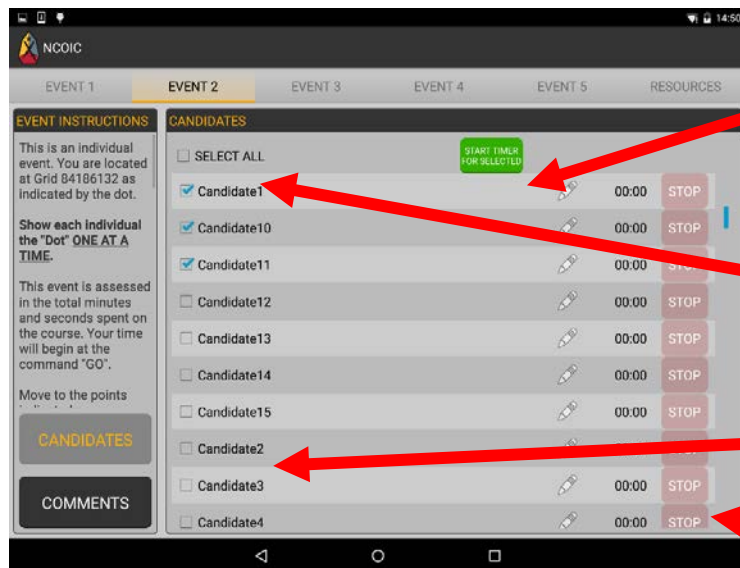
An audible alarm for the timer could be set.

Notes could be made about any Soldier as needed.

Comments could be viewed.

Figure 23. The utilization of the NCOIC timer and alarm applications for Event 1.

For Events 2 and 5, the application supported a separate start/stop button for each Soldier (Figure 24). This enabled the NCOIC to start the event for some of the Soldiers who were present on time and then start others upon their arrival. A Select All button was provided to quickly select all Soldiers and also start another group of Soldiers. That is, if several Soldiers were selected and timers started for them, the select all button selected the remaining Soldiers. The timers continued to count as Events 2 and 5 progressed. A stop button for each Soldier was provided. Once each Soldier arrived at the meet point, the stop button saved their Events 2 and 5 movement time. Each Soldier's timer had to be stopped individually.



Start the timer for the event.

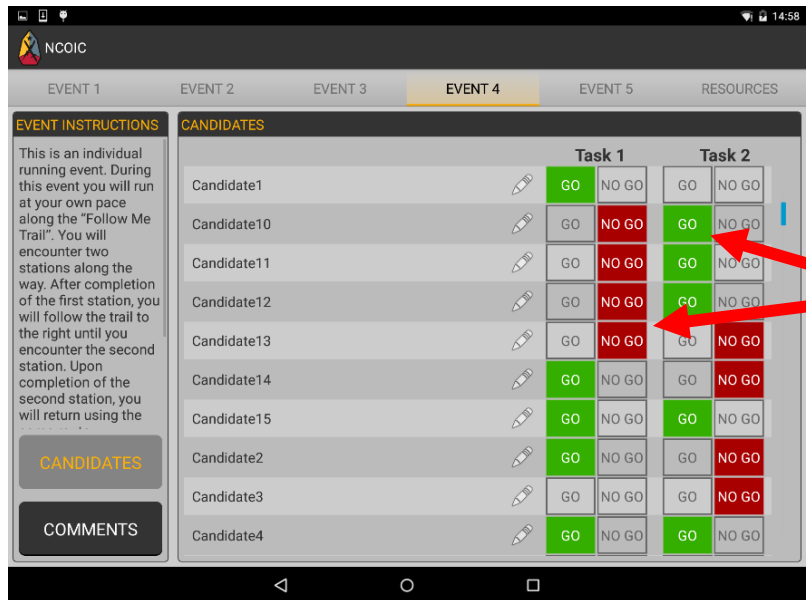
Select all Soldiers or all remaining Soldiers.

Select Soldiers one at a time.

Tap to stop a Soldier's timer

Figure 24. Input screen for Event 2 of the NCOIC application.

The application supported Event 4 and performed exactly as it did for Event 2. However, the NCOIC also was responsible for making the Go or No Go ratings for the two technical tasks performed in Event 4. Next to each Soldier's name is a Go and No Go option for each of the two tasks. The NCOIC either tapped the Go for either task and highlighted the button in green or tapped the No Go and highlight the button in Red. This gave the NCOIC a quick visual indicator of which Soldiers had been rated and what their ratings were (Figure 25).



Each Soldier had a Go and No Go button for Task 1 and 2.

Figure 25. Input screen for Event 4 of the NCOIC application.

Command Sergeants Major application. An application was developed for the Command Sergeants Major to potentially view the results for each Soldier. Each tier rating and a peer (other Soldiers of same Rank AND MOS) rating appeared (Figure 26). For some tiers, additional information, including raw scores, could be viewed by toggling over the results have additional information, including raw scores for the Soldier.

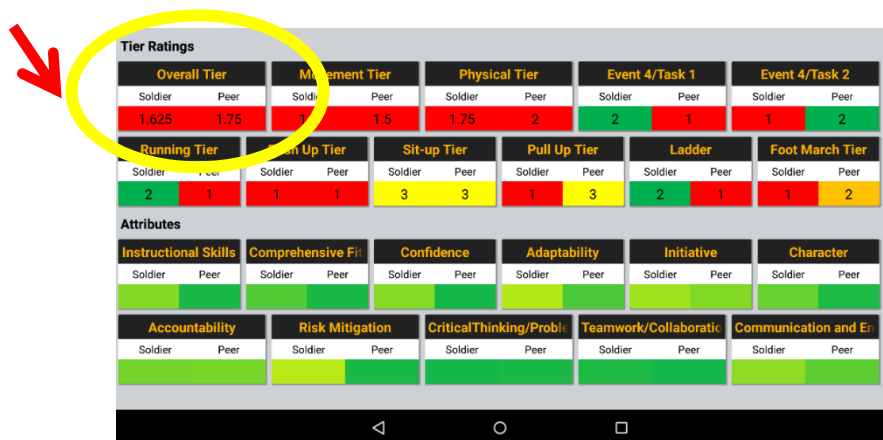


Figure 26. Exemplar scorecard of the Command Sergeant Major application.

Each attribute rating and a peer (other Soldiers of same Rank and MOS) rating appeared (Figure 27). Additional information included numerical ratings for each observable that were used to compute the attribute rating and optional comments provided by the NCOIC or the evaluator. This information was viewed by tapping the attribute and a dialog box appeared. In the dialog box, each observable was listed by event (Figure 28). If a comment was made, this appeared after the observable. To the right of the observable was the numerical rating made by the evaluator.

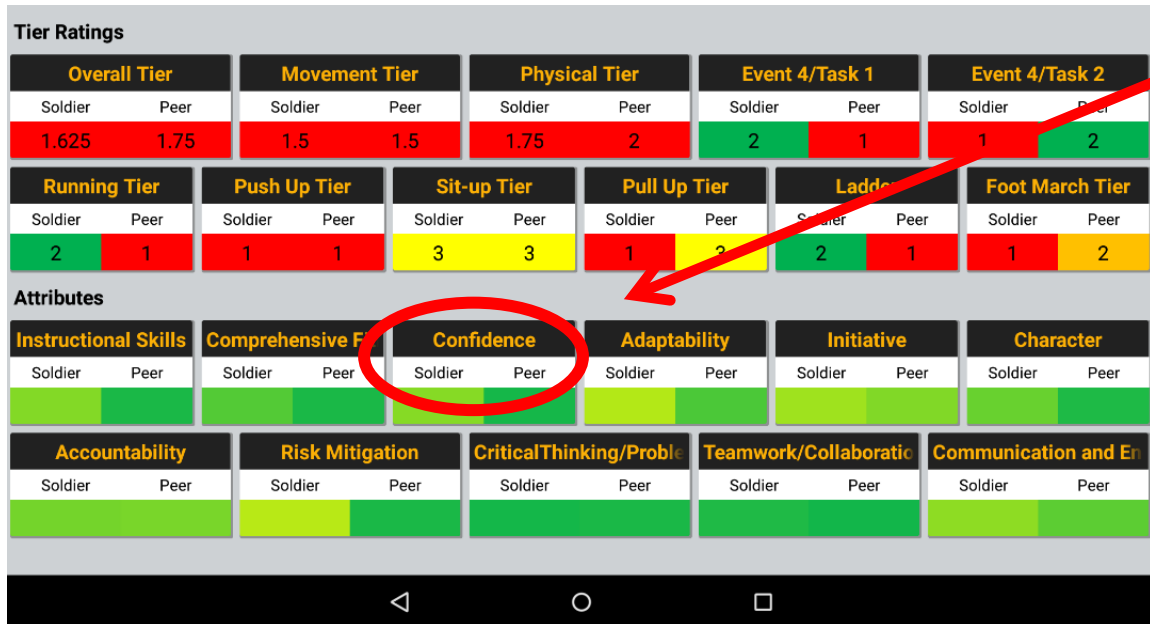


Figure 27. Exemplar scorecard visualization for the attribute results.

The results for the individual go/no go and text based questions were presented by event in the Supplemental information tab. The ratings, evaluator comments, and any multimedia data were viewed by selecting the Supplemental Information tab from the top menu item list. A different event could be viewed by tapping on Event 2, Event 3, etc. in the row below the top row. The user returned to the Soldier's overall report by tapping on Report Card in the top row of tabs (Figure 29).

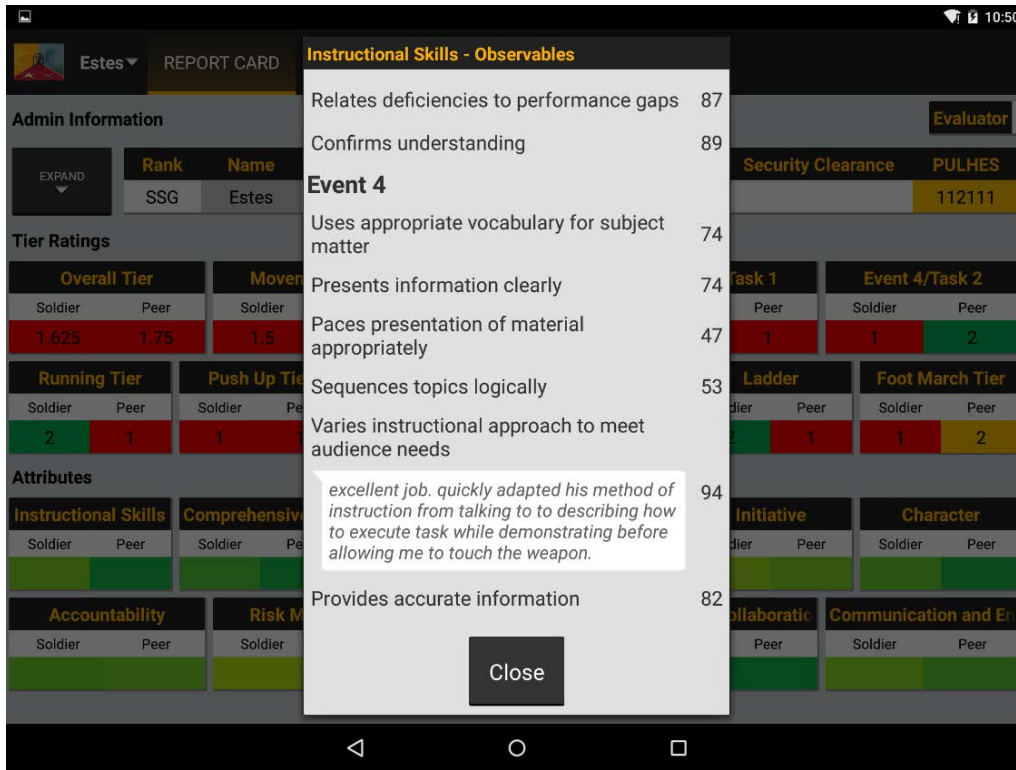


Figure 28. Exemplar detailed information from the evaluator on specific attributes for specific events.

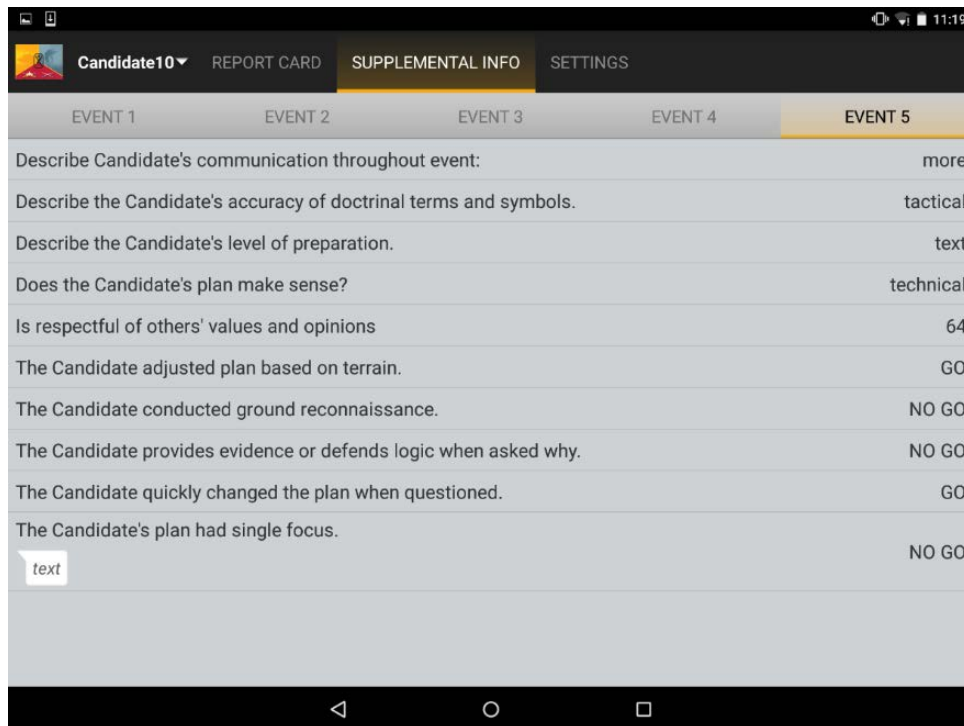


Figure 29. Exemplar summary responses from the evaluators during each event.

Integrated Database

A database was developed to store and perform computations on the data collected via the evaluator and NCOIC applications. Data collected on Soldier behaviors reflecting performance outcomes (Questions) and Leader Attributes (Observables) as well as the timing of movement (formation run, road marches) in the five events of the Instructor / Leader Assessment Program could be managed, analyzed, and tracked to provide data analytics.

The Integrated Database was a web-based system that could store and manage Soldier performance data. It featured a user interface in which results for individual Soldiers could be displayed and reviewed. The database interface also contained tools that instructors and Leaders could use to identify trends and patterns and thus better manage the course. It also could print or save Soldier performance results in a manner that mirrored the paper assessment forms used by evaluators. It was hosted on a desktop and used a wireless local area network (LAN) to configure and sync with the tablet applications. The LAN allowed updates to be provided to the tablets as well as data from the tablet applications to be uploaded, stored, and printed. Uploading data to the database functioned much like integration and configuration. When the tablet was connected to the local area network then the application would be connected to the database through the same wireless connection. Then, the data and results could be pulled into the CSM application from the database. As the database consolidated the data across raters and the NCOIC by individual, the CSM application was able to display all ratings, comments, pictures, and videos for each Soldier.

Results

Piloting the Metrics

Piloting the metrics involved a review-revise iterative process across multiple ILAP monthly assessments. Initially, the piloting process was conducted with one experienced evaluator and one research team member using the metrics to assess the same Soldier. Subsequent piloting efforts involved presenting iterations of the metrics to the evaluators while conducting training sessions prior to each ILAP assessment, observing the use of the metrics during the conduct of the ILAP events, and gaining feedback from the evaluators at the end of the assessment day. Results of each iteration were used to refine the metrics based on evaluator feedback.

Initial Piloting. The initial piloting took place with the cooperation of the ILAP NCOIC and his most experienced evaluator. The research team member who developed the metrics conducted a one-on-one training session with this evaluator and then separately they used the metrics to assess the same Soldier throughout the assessment day, that is, in addition to the Soldier being evaluated by his assigned evaluator, the two-man team conducted a concurrent assessment using the new metrics. At the completion of each of the five events, a comparison of results was conducted to determine whether or not the two evaluators could distinguish each listed observable behavior as well as assess the presence of the behavior with the proposed rating scale. A comparison was made between the ratings to determine rater-agreement. Interrater agreement was between 76% and 82% as identified in the initial and subsequent comparisons.

Results from the initial pilot led to the modification of the draft metrics and event situations, as well as the identification of areas to include in the evaluator training.

Discussion and Recommendations

ILAP and the Army Talent Management Strategy

The ILAP reflected the Army's Talent Management Strategy by determining whether Noncommissioned officers assigned to the Maneuver Center of Excellence would remain on the current instructor/leader assignment, or based on his/her ERB and ILAP performance be reassigned to a higher or lower priority position. ILAP supported the Talent Management Strategy by ensuring that the Army has created

mechanisms to capture the true demand for particular talents, has inventoried the talents available in its people, and then heavily weight[ed] talent matching as an assignment (employment) consideration. This increases overall productivity and readiness, with more of the Army's people "in the right place, doing the right work at the right time." (Department of the Army, 2016, p. 10).

Specifically, on the second day of ILAP, each Soldier was required to appear before a board of USAARMS or USAIS CSMs who would determine the best fit for the Soldier. When considering a Soldier for an instructor position the CSM board reviewed personnel data to ensure the Soldier met all administrative qualifications. For example, Army Regulation 614-200 *Enlisted Assignments and Utilization Management* selection criteria for instructor duties within the Basic Officer Leaders Course state that the Soldier must meet requirements for the GT Score, modified table of organization and equipment (MTOE) assignments within the last two years, Flag status⁴, previous Platoon Sergeant positions within an MTOE unit, and be a graduate of the appropriate level of NCOES (MEL code). In addition to the standard name, rank, MOS, and APFT scores, essential information such as SQI and ASI, as well as security clearance and PULHES (Military Profile Serial System), was included as consideration of this information is required by regulatory guidance when considering a Soldier for certain instructor positions, e.g. Basic Officer Leaders Course, Infantry and Armor Officer Advanced Courses, Senior Leaders Course, Bradley Master Gunner Course, and Ranger School instructor positions. In addition to the required information, the previous assignments and assignment preference were included to give the CSMs an indication of the Soldiers level of experience within his MOS and personal preferences for his next assignment. The administrative information was taken from two sources – the Soldier's Enlisted Records Brief (ERB) and a questionnaire that was provided to the Soldier once he was notified of the pending assignment to Fort Benning.

Prior to the Soldier entering the room the ILAP NCOIC would provide a synopsis of the Soldier's performance from the previous day highlighting areas documented by the evaluator that spoke to the Soldier's strengths and weaknesses. The Soldier then appeared before the board for approximately 10 minutes and responded to questions from the CSMs. Prior to the Soldier being released from the board the USAARMS and USAIS CSM would determine if the Soldier was to remain on the current instructor/leader assignment, or based on his ERB and ILAP performance

⁴ Flag status is related to the suspension of favorable personnel actions as covered in AR 600-8-2.

be reassigned to a higher or lower priority position. The Noncommissioned Officers received feedback on their ILAP performance and feedback on their overall career progression, guidance on how to make better advancements, and information regarding resources. If the Soldier was diverted, the new assignment information was provided back to the Human Resources Command (HRC) by the ILAP NCOIC.

Utilization of the ILAP Tools

To best support the program objectives described above, assessment methods and tools would need to be reliable, valid, and have a high degree of utility and user-friendliness. In order to demonstrate the capabilities of a digital system to assess the Soldiers during the events and then provide timely, reliable data available for the CSM Boards, the research employed a spiral development process by which the content of the assessments was first developed via paper-pencil through observations of the existing assessment procedures, gathering requirements from the ILAP NCOICs, and piloting the assessments in parallel with the existing assessments with the support and assistance of trained evaluators. For example, during the piloting of both the paper-pencil and digital applications, evaluators, the NCOICs and CSMs were each given basic instruction prior to use of the respective applications. Instructions consisted of identification of the basic buttonology as well as indication of pop-up support messages that were programmed into the applications. During the ILAP events, members of the development team were on hand to support troubleshooting. Iterative prototypes of the Evaluator application were used at three successive ILAP events. The database, NCOIC and CSM applications were each used at two successive ILAP events (the Evaluator application was featured at these as well). During each of these tests, feedback was elicited from users. Immediately following the completion of the event evaluation, research team members informally asked the evaluator for their feedback. More formal interviews were conducted with groups of evaluators at the completion of the assessment day to collect feedback on the usability of the metrics. These sessions contributed to the revision of the metrics. Features were added, removed or modified to satisfy users' needs.

One critical element to sustaining the reliability of an assessment system is through the training of the assessors. As previously stated, approximately 50% of the evaluators each month were new to the ILAP assessment procedures. Consequently, the ILAP NCOIC scheduled training sessions prior to each assessment day in order to familiarize the new evaluators with their roles and responsibilities. It is recommended that a portion of these sessions be devoted to training the evaluators on the use of the assessment metrics. Research team members in conjunction with the ILAP NCOIC could conduct the metrics training sessions to mitigate variance in ratings and increase interrater agreement. Explanations could be provided of how to use a behavioral observation metrics to assess the Soldier during each event. Examples of previously observed Soldier actions and behaviors could be discussed while explanations of how each portion of the metrics corresponds to each event could be presented. Evaluators also could be given the opportunity to review the metrics with research team members to clarify any misunderstandings.

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Acronyms and Abbreviations

APFT	Army Physical Fitness Test
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
ASI	Additional Skill Identifier
BARS	Behavioral Anchored Rating Scale
CSM	Command Sergeant Major
DA	Department of the Army
ERB	Enlisted Records Brief
HRC	Human Resources Command
ILAP	Instructor Leader Assessment Program
McOE	Maneuver Center of Excellence
MEL	Military Education Level
MOS	Military Occupational Specialty
MTOE	Modified Table of Organization and Equipment
NCO	Non-commissioned Officer
NCOIC	Non-commissioned Officer in Charge
POI	Program of Instruction
PULHES	Physical capacity/stamina, Upper extremities, Lower extremities, Hearing/ear, Eyes, Psychiatric
SQI	Skill Qualification Identifier
TEWT	Tactical Exercise without Troops
TLPs	Troop Leading Procedures
TRADOC	Training and Doctrine Command
USAARMS	United States Army Armor School
USAIS	United States Army Infantry School
USASS	United States Army Sniper School
USMA	United States Military Academy

Appendix A

Attribute Descriptions

Comprehensive Fitness –Emotional Dimension

Has control of emotions

Has a positive attitude

Shows frustration

Is the Soldier overwhelmed by the situation?

Is Soldier focused on the task at hand?

Confidence

Shows frustration

Is the Soldier overwhelmed by the situation?

Is appropriately confident

Soldier appeared nervous before the run

Does the Soldier appear frustrated at the map problem?

Does Soldier display any over confidence?

Soldier was eager to begin the station

Soldier was confident in where to go next

Soldier easily answered questions

Soldier was unsure during presentation

Soldier was not distracted

Soldier provides evidence or logic when asked why

Soldier quickly changed plan when questioned

Soldier's plan had single focus

Adaptive

Shows frustration

Gives up easily

Handles difficulties/challenges

Continuously adjusts to the situation

Is flexible to change

Is stubborn

Soldier adjusted plan based on terrain

Initiative

Continuously adjusts to the situation

Waits to be told what to do

Takes charge

Does the Soldier use time to prepare for the run?

Soldier conducted ground reconnaissance of terrain

Character

Shows frustration

Is appropriately confident

Has control of emotions

Has a positive attitude

Is respectful of others' values and opinions

Makes excuses

Overcame personal limitations

Is tactful in interactions with others

Brags too often on own accomplishments

Excessively swears

Is honest with self and others about limits

Responds appropriately to feedback

Does the Soldier display any signs of extreme physical duress

Did the Soldier make any excuses based on their MOS, Age, Rank or Position?

Does the Soldier appear to put forth 100%?

Does the Soldier exhibit any objection to making corrections to his peer?

Did the Soldier appear to put forth his best effort?

Accountability

Makes excuses

Gives up easily

Participates vs. Socializes

Was the Soldier on-time?

Was the Soldier in the correct uniform?

Did the Soldier have the necessary equipment?

Risk Management

Did the Soldier use time to prepare for the run?

Makes on-the-spot corrections

Does the Soldier demonstrate safe range habits?

Critical Thinking / Problem Solving

Applies corrective measures

Relates deficiencies to performance gaps

Can breakdown the task

Does the Soldier appear to understand their instructions?

Does the Soldier formulate his or her own solution?

How is the Soldier making use of his or her time?

Is the Soldier engaged in learning the task at hand?

Does the Soldier ask any questions regarding the task?

Teamwork / Collaboration

Applies corrective measures

Relates deficiencies to performance gaps

Can breakdown the task

Does the Soldier formulate his or her own solution?

Is tactful in interactions with others

Is honest with self and others about limits

Responds appropriately to feedback

Does the Soldier exhibit any objection to making corrections to his/her peers?

Provides useful feedback

Does the Soldier look to others for help?

Communication and Engagement

Participates vs. Socializes

Is respectful of others' values and opinions

Has a command voice

Actively listens to peers and evaluators

Encourages others

Stays engaged with peer

Describe the Soldier's meaningful communication:

Appendix B

ILAP Attribute Crosswalk Table

Legend for the following table

Attributes

1. Instructor Skills - IS
2. Comprehensive Fitness – Emotional Dimension – CF-ED
3. Confidence - Conf
4. Adaptability - Adp
5. Initiative - Ini
6. Character - Char
7. Accountability - Acct
8. Risk Mitigation - RM
9. Critical Thinking / Problem Solving – CT/PS
10. Teamwork / Collaboration – T/C
11. Communication and Engagement – C+E

Events

1. 2.5 mile formation run – E1
2. Orienteering – E2
3. Road March and Small Arms Proficiency – E3
4. Small Arms Stress Run – E4
5. Road March and Combined Arms Maneuver Exercise – E5

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Has control of emotions		✓	✓	✓	✓	✓		✓	✓			✓					
Makes excuses	✓	✓	✓	✓	✓	✓						✓	✓				
Has a positive attitude		✓	✓	✓	✓	✓		✓				✓					
Overcame personal limitations		✓	✓	✓	✓	✓						✓					
Gives up easily	✓	✓	✓	✓						✓			✓				
Is appropriately confident				✓					✓			✓					
Handles difficulties/challenges			✓	✓	✓					✓							
Waits to be told what to do	✓		✓	✓	✓						✓						
Shows frustration	✓		✓	✓				✓	✓	✓		✓					
Continuously adjusts to the situation			✓	✓	✓					✓	✓						
Uses appropriate vocabulary for subject matter				✓	✓	✓	✓										
Has a command voice				✓	✓	✓											✓
Actively listens to peers and evaluators				✓	✓												✓
Can breakdown the task				✓	✓									✓	✓		
Confirms understanding				✓	✓		✓										
Is tactful in interactions with others				✓		✓						✓				✓	
Applies corrective measures				✓			✓							✓	✓		
Braggs too often on own accomplishments	✓			✓								✓					
Encourages others				✓													✓
Excessively swears	✓			✓								✓					
Is flexible to change				✓						✓							

Observables	Reverse Scored	Events					Attributes											
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E	
Is honest with self and others about limits				✓								✓					✓	
Is stubborn	✓			✓						✓								
Makes on-the-spot corrections				✓										✓				
Provides useful feedback				✓			✓										✓	
Relates deficiencies to performance gaps				✓			✓								✓		✓	
Responds appropriately to feedback				✓								✓					✓	
Participates vs. Socializes				✓									✓					✓
Stays engaged with peer				✓														✓
Takes charge				✓							✓							
Answers questions thoroughly and accurately					✓	✓	✓											
Maintains composure when answering questions					✓	✓	✓											
Presents information clearly					✓	✓	✓											
Provides accurate information					✓	✓	✓											
Emphasizes important points					✓		✓											
Gets to the point					✓		✓											
Paces presentation of material appropriately					✓		✓											
Is respectful of others' values and opinions				✓	✓	✓	✓					✓						✓
Sequences topics logically					✓		✓											
Summarizes major lesson points					✓		✓											

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Varies instructional approach to meet audience needs					✓		✓										
Questions																	
Was the Soldier on-time?		✓											✓				
Was the Soldier in the correct uniform?		✓											✓				
Soldier appeared nervous before the run	✓	✓							✓								
Did the Soldier have the necessary equipment?		✓											✓				
Does Soldier use time to prepare for the run?		✓									✓			✓			
Does the Soldier display any signs of extreme physical duress	✓	✓										✓					
What was the Soldier's demeanor?		✓															
Does the Soldier appear to understand their instructions?			✓												✓		
Did the Soldier make any excuses based on their MOS, Age, Rank or Position?	✓		✓									✓					
Does the Soldier appear frustrated at the map problem?	✓		✓						✓								
Does the Soldier embrace the map problem																	
Does Soldier formulate their own solution?			✓												✓	✓	
Does the Soldier look to others for help?	✓		✓														✓

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Is the Soldier overwhelmed by the situation?	✓		✓					✓	✓								
Does Soldier display any over confidence?	✓		✓						✓								
Does the Soldier appear to put forth 100%?			✓								✓						
How is the Soldier making use of his time?			✓											✓			
Soldier was eager to begin the station			✓						✓								
Soldier was confident in where to go next			✓						✓								
Is Soldier still recovering from previous events (physical stress)?	✓			✓													
Is Soldier engaged in learning the task at hand?				✓										✓			
Is Soldier focused on the task at hand?				✓				✓									
Does Soldier ask any questions regarding the task?				✓										✓			
Does Soldier demonstrate safe range habits?				✓									✓				
Does the Soldier exhibit any objection to making corrections to his peer?	✓			✓							✓					✓	
Describe the Soldier's level of communication - Above Average/Average/Below Average				✓													
Describe the Soldier's meaningful communication:				✓													✓

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Overall, how did the Soldier behave during this event				✓													
How did the Soldier's input benefit his or her partner?				✓													
How does the Soldier react to the instructions?					✓												
How does the Soldier manage his time to prepare for the presentation?					✓												
Soldier easily answered questions					✓			✓									
Soldier was unsure during presentation	✓				✓			✓									
Soldier was not distracted					✓			✓									
Did the Soldier appear to put forth his best effort?					✓						✓						
Given the conditions, do you feel the presentation is adequate, substandard, or above standard					✓												
In your words, briefly describe the presentation					✓												
Describe the Soldier's level of preparation.						✓											
Describe the Soldier's accuracy of doctrinal terms and symbols						✓											
Does Soldier's plan make sense?						✓											
Describe Soldier's communication throughout event:						✓											

Observables	Reverse Scored	Events					Attributes										
		E1	E2	E3	E4	E5	IS	CF-ED	Con	Adp	Init	Char	Acct	RM	CT/PS	T/C	C+E
Soldier provides evidence or logic when asked why						✓			✓								
Soldier quickly changed plan when questioned	✓					✓			✓								
Soldier's plan had single focus	✓					✓			✓								
Soldier conducted ground reconnaissance of terrain						✓					✓						
Soldier adjusted plan based on terrain						✓				✓							