Simulated Training
Real Learning
The CFFT and West Point Cadets
By Capt. Ryan Scott

The use of simulators in training is nothing new. Commanders have had the option of using the Engagement Skills Trainer (EST) and Virtual Battle Space (VBS) trainers for many years. As an artillery officer I spent many hours during Basic Officer Leadership Course (BOLC) in the Call for Fire Trainer (CFFT) (née Guardfist) honing my target location skills. While at my first unit, however, my use of the installation’s simulators was scant and typically an afterthought to “real” training. Typically, I saw simulators such as these as a backup to when I could not execute live-fire training on a range. I have since corrected this misunderstanding on simulators and their efficacy. If you have similar doubts, please consider the following.

The existing research on computer simulations and their effect on learning is extensive. Beyond merely providing the opportunity for task repetition, simulators have a positive impact on learning goals, and touch cognitive, behavioral and affective outcomes (Vlachopolus and Makri). Research shows how simulators effectively provide the opportunity for participants to develop and implement skills such as communication, working as a team, decision-making, managing stress and prioritization of training tasks (Flanagan, Brenden, Nestel, Debra and Joseph, Michele). Even more specifically, when widely accepted and implemented within a curriculum as a pre-lab application event, simulators can increase the efficacy of lab activities (Rutten, Nico, van Joelingen, Wouter R., and van der Veen, Jan). Positive cognitive affectations occur as well. An individual’s motivation to learn is positively related to effective simulations (Fu, Kun, Hainey, Thomas and Baxter, Gavin). Most significantly for military training, the use of simulators when compared to lecture led to an increase in student knowledge and confidence in the material (Warren, Jessie, Luctkar-Flude, Marian, Godfrey, Christina and Lukewich, Julia). Instructor integration and efficacy in applying simulations is key to successful implementation. Success is predicated on instructor use, motivation and efficacy in implementing the simulation (Vlachopolus and Makri). What I want to share now are the quantifiable, immediate results that can occur when simulation training is used in conjunction with live execution. Specifically, how the use of a simulator affects live-fire execution training when both are integrated into the same training event.

West Point cadets attend Cadet Field Training (CFT) between their freshman and sophomore years. During this training, cadets execute 31 days of individual and collective task training and assessment. The purpose is to “develop, train, test and validate specific tasks” (Department of Military Instruction, 2018, p. 41). For the summers of 2017 and 2018, my area of responsibility during CFT planning, resourcing and executing call for fire (CFF) lane.

Cadets train on the Call for Fire Trainer. (Courtesy photo)
goal was to train and test cadets on determining a target’s location, the three line call for fire format, and their ability to call for and adjust indirect fire rounds onto a target. This event was graded and the results factor in their overall military grade point average. For this event, cadets lose points for the following deficiencies; if their target location error exceeds 250 meters (generous, I know, but they are untrained observers), if they fail to formulate their call for fire in under three minutes, if they fail to correctly determine the observer target factor, if they fail to transmit their first correction within 45 seconds of the first round’s impact, if they require more than five rounds in adjustment, and if their fire for effect rounds are greater than 50 meters from the target. In both 2017 and 2018, close to 1,200 cadets participated in the training and assessment. Each cadet averaged 15 to 17 minutes in the observation post (OP) to complete their graded portion.

In 2017, the cadets received a block of instruction on the call for fire using a PowerPoint lecture and check-on-learning before moving on the live portion of the training the following day. The training was updated in the 2018 iteration. Last summer, the block of instruction was conducted using the Call for Fire Trainer facility integrated into the field environment, and time was allotted for each cadet to have the opportunity to individually call for fire in the trainer before live-fire execution the following day. In 2017 the average cadet grade for the Call for Fire lane was 97.51. In 2018 the average cadet grade was 99.21. (While the grade average for CFF lane is admittedly high compared to other CFT graded events, the spread of grades among the population of cadets for the CFF lane is similar to the other CFT graded events). At first glance, this comparison may solicit a shrug and a “so what” – they only went from an A plus to a higher A plus. However, statistically speaking, the number of cadets that would have to have scored higher in 2018 than 2017 among a sample size of over 1,000 cadets to affect such a change when the average grade was already high is significant. This is also evidenced by the decrease in the standard deviation of overall cadet CFF grades of 5.28 in 2017 to 3.53 in 2018 indicating that more cadets scored higher and closer to the mean average than the year prior.

There is another determinant of the success of the simulator/live fire iteration over lecture/live fire in this year’s CFT. On an average day in CFT 2017 (when weather did not play a factor in our ability to fire live) we required on average 8.5 hours a day of live firing to enable the cadet companies to complete their live CFF iterations. That year, each cadet averaged 15 to 17 minutes in the observation post (OP) to complete their graded portion. In 2018 under similar conditions (same number of OPs, FDCs and firing sections) the average live-firing day was 7.5 hours a day with each cadet averaging 10 to 12 minutes in the OP to complete the graded portion indicating an increase in efficacy of the time required for each cadet to execute their individual iteration of the training. Simply stated, the use of simulations followed by immediate live iterations improved the quality and efficacy of live-fire training throughput without sacrificing rigor or realism of the live-firing experience.

While simulations are standard practice in many tasks and across many platforms, I believe the increase in cadet performance in 2018’s Cadet Field Training was the immediacy of live training following simulations and the individual time cadets had in the simulators. In some cases, only hours passed between when a cadet practiced in the CFFT and when they fired live the next morning. The combination of using hands-on equipment in the simulators (real maps, protractors, binocu-
lars and Advanced System Improvement Program radios) along with the computer simulated artillery rounds provided a tactile and cognitive learning experience that was quickly validated in the live fire the next day.

The qualitative, anecdotal evidence I gleaned on the use of the CFFT is mixed. Many FSOs I spoke to while researching this article told me of the value of the CFFT to their training, and the how frequency of use and proximity to live training employed mirrors results similar to mine. A few FSOs spoke of minimal access to the CFFT for various reasons; from lack of time to lack of desire to implement simulations. It is my hope that my own results can buttress the arguments of FSOs who are currently using simulators, and to encourage those who are not placing time in the simulators in their training schedules to do so. The results we experienced at West Point among untrained observers should provide encouragement to trained observers as to the efficacy of time in the simulators that is immediately followed up by live-fire implementation.

Whether your unit readily depends on the CFFT or not, I posit that simulators must not become the white noise of Call for Fire training. Leaders must not utilize simulators only as an alternative to live training due to limiting factors such as adverse weather or lack of range availability. This is a misuse of simulators. Leaders who send their soldiers to the CFFT, the Engagement Skills Trainer or the Virtual Battle Space facilities without specific task, purpose or guidance are not only wasting time, but potentially degrading the very skills they seek to improve. Similarly, for the training garnered in the trainers to be useful live-fire iterations must follow as soon as possible to the simulation. Based on results with our cadet untrained observers I recommend that leaders look at the CFFT not as their backup plan, but as the crawl and walk phases of training followed immediately by the run phase of live execution. As evidenced by CFT 2018, doing so increases Soldier efficacy in the tasks being trained, increases live-fire training throughput and decreases the resources required to achieve proficiency.

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Cadets train on the Call for Fire Trainer. (Courtesy photo)