

On Sunday, December 30, 2012, the staff at The Truth About Guns in cooperation with King 33 Training performed a live fire simulation of certain scenarios that may happen during a school shooting incident with the purpose of determining to what extent armed personnel on school property would have on a future event like the ones in Newtown, Connecticut. This article will serve as the discussion of the methodology used during the experiment, as well as the limitations of the results.

### **Table of Contents**

- Executive Summary and Key Findings
- Methodology and Limitations, Participant Data
- Scenario 1 -- Armed Guard at Front Door, No Warning
- Scenario 2 -- Armed teacher with No warning
- Scenario 3 -- Armed teacher with Advanced Warning, "Lockdown" Procedure
- Scenario 4 -- Armed Response to Active Shooter, Single Responder
- Conclusion and Suggestions for Future Experiments

## **Executive Summary**

At the King 33 facility in Connecticut, 11 volunteers along with 5 staff members enacted a series of simulated shooting scenarios with the intent of determining whether an armed teacher or armed guard at a school such as Sandy Hook Elementary would have been able to successfully confront and interdict an active shooter.

When designing the scenarios for this experiment, care was taken to identify moments during the progression of a "typical" active shooter case where armed intervention would have been effective in interdicting the shooter. Three such moments were identified, specifically the moment the shooter entered the school building, the moment they entered a classroom, and the moment an armed response arrived on scene. One of these scenarios (when the shooter entered the classroom) was enacted both without any advanced warning that the shooter was coming, and with sufficient time for the teacher to enact a standard "lockdown" procedure as implemented at Sandy Hook Elementary.

For scenarios where no advanced notice was given, unarmed participants were instructed to leave and re-enter the area being defended at random in order to simulate normal traffic and keep the defender from being able to react to an event such as the door opening instead of the first sight of a gun or the sound of a gunshot, as would be the case during a real shooting.

### **Results: Scenario 1**

Scenario 1 consisted of a single armed guard seated behind a desk, facing the entryway. This position is consistent with many current configurations for schools, enabling the security guard to watch the front door and challenge visitors to the school during the day. Unarmed participants

were then walked out an opening in the wall and past the guard until the shooter emerged from the opening and engaged the guard. The guard was not aware of exactly when the shooter would emerge and therefore had no advanced warning.

This type of scenario is applicable to situations where the shooter is carrying the firearm concealed into the school, or the security guard does not have sufficient warning through cameras or other means to alert them that an armed intruder is about to enter the school. According to the results from our testing, in this scenario **the armed security guard appears to be ineffective at interdicting the active shooter without advanced notice**. While the shooter can choose their moment to attack and prepare themselves to fire the moment they are seen by the security guard, the guard has insufficient time to respond.

In future experiments we would like to investigate the effectiveness of an armed guard when there is advanced warning, such as would be provided if the shooter was visibly through a door.

### **Results: Scenario 2**

Scenario 2 involves a shooter making entry without warning into a classroom setting where the teacher is carrying a concealed weapon. As previously mentioned, students were encouraged to exit and enter the room at random to keep the teacher from knowing when the shooter would enter the room. The teacher had no advanced warning of the shooter's presence, and was not given any instructions or training on how to react.

The results of this scenario were mixed, and depended on the level of training of the shooter and teacher.

For example, round 2 saw participant #5 in the role as "teacher," a person with prior military experience and current concealed carry licensee, facing participant #1 as the shooter who was active military. While the shooter did inflict casualties in the room, the teacher was able to successfully engage the shooter and keep them from entering the room.

On the other hand, round 5 pitted a national-level competition shooter as the shooter against an older retired law enforcement officer as the teacher. The shooter was able to neutralize the teacher before they were able to even begin to draw their weapon.

While not all teachers were able to successfully stop the shooter, it appears based on the data that **armed teachers would be beneficial in situations where there is no advanced warning**.

If the teacher is ineffective then there is no difference from the baseline "risk" associated with a shooting scenario such as this, as the natural tendency seemed to be for the students to retreat and not get in the line of fire between the teacher and shooter. Thus, the probability of students being shot accidentally by a firefight in the classroom is very small.

If the teacher is effective in stopping the shooter (as they were in some situations) then there is a definite decrease in the potential body count in the room as the threat has been completely removed.

While deterrence isn't something being investigated by this experiment it is also important to note the probable psychological effect that the knowledge of an immediate armed response would have to prospective active shooters.

Future experiments should investigate whether the direction that the door opens has an impact on the effectiveness of the teacher.

### **Results: Scenario 3**

Scenario 3 was identical to the configuration of scenario 2 with the exception that the classroom had a few seconds warning that there was a shooter coming. When the teacher heard gunshots, they were instructed to perform a basic "lockdown" procedure as implemented in some schools that consisted of gathering the children in one corner of the room before attempting to interdict the shooter as they entered the room.

In every instance where scenario 3 was played out, the teacher was able to successfully keep the shooter from entering the room and often without a single casualty among the students or even a single round fired on the part of the shooter. **In this scenario, an armed teacher was extremely effective in stopping an active shooter.**

Future experiments should explore the difference in shooter's behavior when they are uncertain that there is an armed teacher.

### **Results: Scenario 4**

Scenario 4 began with a shooter entering a classroom full of students with no armed teacher present and opening fire. On hearing the gunshots, an armed responder (either an armed guard or another teacher, for the purposes of this experiment it was not important) who was standing 25 yards from the classroom door was instructed to rush to the scene of the shooting and engage the shooter.

Like scenario 2, the successful interdiction of the shooter depended on the level of training of the participants.

When responders were participants with high levels of training, such as a military background or law enforcement training, they were successful in immediately engaging and stopping the shooter.

However, when responders had little or no training the results were less impressive. Not only did some responders fail to effectively engage the shooter, but in one instance they actually shot a student that was fleeing the room instead of the shooter.

For this scenario, **an armed response was only completely effective when the responder had adequate training**. Those with insufficient training were able to engage the shooter as well, but results were less impressive.

## **Conclusion**

This experiment was intended to be a preliminary test, mainly interested in providing a proving ground for the methodology and scenarios selected for testing before being implemented in a large scale test at a later date. However, based on the limited data collected from this experiment it appears that **an armed teacher would indeed be a benefit and save lives in an active shooter scenario**. The caveat to that statement is that the teacher must be properly trained in order to be most effective. Maximum effectiveness of an armed teacher of any skill level is achieved with advanced warning of the approaching shooter and implementation of a classroom “lockdown.”

# **Methodology and Limitations**

## **Background and Concept**

In the days and weeks following the shooting at Sandy Hook Elementary School in Newtown, Connecticut, the idea that armed guards should be installed at all schools in order to protect the children within was presented by a number of individuals. Another idea that was presented was having teachers be allowed to carry a concealed firearm. In the debate that followed, various arguments were presented about the perceived effectiveness of each proposed solution, but no data was presented to support either argument.

The staff at The Truth About Guns had been planning for some time prior to the December shooting to conduct a school shooting simulation in order to test some of the theories being presented in the media about armed students and teachers, and had already discussed how best to perform that test. However, following the December shooting the publisher decided to perform a smaller scale test than originally intended and to focus on the circumstances surrounding the Sandy Hook Elementary shooting in order to better inform the current debate. The small scale test would be used to confirm the methodology as well as record some preliminary results that would be verified in a later, larger scale test.

For these tests, Simunition firearms were used in order to make the scenarios as real as possible. A Glock 19 handgun was used for defenders, and a semi-automatic AR-15 rifle was issued to the active shooter.

## **Methodology**

The methodology for this experiment was designed by Nick Leghorn. Having graduated from The Pennsylvania State University with a degree in Security and Risk Analysis, Nick was immediately employed as a contractor working for the Department of Homeland Security performing risk analysis for terrorism events.

Applying the same level of analysis to the Sandy Hook Elementary shooting as any other terrorist act, moments during the event were identified where an armed intervention would have had the ability to stop the shooter and keep them from committing any further murders. In generating the scenarios, some of the moments were combined or expanded in order to get the maximum amount of data from as few scenarios as possible.

The following moments were identified as possible interdiction points for the active shooter:

- On approach to the school and entering the front door, interdiction by armed guard.
- When entering the first classroom, interdiction by armed teacher.
- After entering a classroom, interdiction by armed response (both guard and teacher).

In reality, the moment of first contact with an armed response would depend on when the shooter first brandished their weapon and began firing. However, for the purposes of this experiment we investigated each identified point of interdiction both with advanced warning that the shooter was approaching and without advanced warning.

Based on the analysis, the following scenarios were outlined and enacted:

1. While seated at a table, one participant armed with a holstered handgun would act as security guard. A stream of unarmed participants would walk past, until one with a firearm would open fire and engage the guard. The timing of the armed student would be randomized to keep the guard from knowing when the shooter would emerge.
2. In a classroom environment, an armed teacher (concealed handgun on their person) would be instructed to act as though they were teaching a class (consisting of unarmed participants). After the start of the scenario, the participants were instructed to exit and re-enter the classroom at random. At an unspecified moment, the shooter would then enter the classroom and open fire. The teacher was instructed to engage the shooter and stop them.
3. The third scenario was identical to the second, with the exception that the teacher would be given a few moments notice that the shooter was approaching. At that time they would be instructed to gather the students in a corner (common "lockdown" procedure used in schools) and then use their concealed handgun to defend the classroom. This scenario would also be applicable to an armed guard with advanced notice, since both scenarios involve armed personnel attempting to protect a doorway.

4. A participant would be instructed to enter a room full of unarmed participants and begin shooting. When the shots were fired, a second participant armed with a handgun would be instructed to run towards the classroom and stop the shooter. This simulates not only an armed teacher responding to the shooting, but an armed guard as well.

For scenarios where no advanced notice was given, unarmed participants were instructed to leave and re-enter the area being defended at random in order to simulate normal traffic and keep the defender from being able to react to an event such as the door opening instead of the first sight of a gun or the sound of a gunshot, as would be the case during a real shooting.

In order to attempt to keep the scenarios as close to the planned outline as possible (Nick was forced to leave before the end of the experiment due to a prior engagement and was unable to supervise) all scenarios were written down and presented to the staff. Here are the written instructions as provided:

*Scenario 1: Armed Guard at School Entrance*

*Materials: One chair, one table (hard cover) one doorway.*

*Start Position: "Guard" starts seated in chair behind desk, arms relaxed on desk, handgun live and loaded to capacity in holster. shooter starts on opposite side of door and not visible to "guard," handgun live and loaded to capacity at the low ready position.*

*ON SIGNAL: Unarmed participants walk in and out of the doorway (passing the desk when entering) simulating normal traffic at the entrance of the school. At a random interval, shooter enters school and must engage "guard." One round to a vital area ends the simulation.*

*Timing: shooter enters doorway to last audible round.*

=====

*Scenario 2: Armed Teacher, First Classroom*

*Materials: One chair, one table (hard cover) one doorway, assortment of chairs arranged as if in a classroom. DOOR IS CLOSED.*

*Start Position: teacher starts standing in front of chairs, and is instructed to start talking about a topic of their interest. teacher handgun live and loaded to capacity in holster, concealed.*

*Unarmed participants are seated in the chairs as "students." shooter starts on opposite side of door and not visible to "teacher," handgun live and loaded to capacity at the low ready position.*

*ON SIGNAL: Unarmed participants begin getting up and walking in and out of the classroom at their leisure. Each student opens and closes the door as they enter or leave. At random point in time, shooter is instructed to enter classroom and begin shooting. One round to a vital area ends the simulation.*

*Timing: shooter enters doorway to last audible round.*

=====

*Scenario 3: Armed Teacher, Second Classroom, Remains In Room*

*Materials: One doorway, assortment of chairs arranged as if in classroom, desk, chair.*

*Start Position: teacher starts standing in front of chairs. teacher handgun live and loaded to capacity in holster, concealed. Unarmed participants are seated in the chairs as "students." shooter starts in secondary room down the hallway on opposite side of door and not visible to "teacher," handgun live and loaded to capacity at the low ready position.*

*ON SIGNAL: shooter begins firing rounds in secondary classroom. Upon hearing gunshots, teacher is instructed to defend the classroom. One round to a vital area ends the simulation. Timing: First audible round to last audible round.*

=====

*Scenario 4: Armed Teacher or Roving Guard, Second Classroom*

*Materials: One doorway, assortment of chairs arranged as if in a classroom, open hallway.*

*Start Position: "Defender" starts some distance away from mock classroom where they cannot see the doorway, handgun live and loaded to capacity at low ready. shooter starts inside mock classroom, handgun live and loaded to capacity at the low ready position, spare magazine issued as required.*

*ON SIGNAL: shooter is quietly instructed to begin shooting and told to focus on shooting each chair in the classroom once. "Defender" is instructed to start moving as soon as they hear gunshots. "Defender" must engage shooter. One round to a vital area ends the simulation.*

*Timing: First audible round to last audible round.*

Once the scenarios had been played out, the results would be recorded on a spreadsheet. Metrics collected included the level of training and experience of each participant, along with the number of rounds fired and the number of vital and non-vital hits each person scored. These results would be analysed along with video of the scenarios to determine the results. Time was not officially kept as all scenarios were supposed to be recorded on video.

In addition to the metrics previously described, subject matter experts were tasked with watching and interpreting the results of each scenario to provide accurate analysis of what happened and what effect that would have on an active shooter scenario. Subject matter experts included one individual with experience in the special forces of the U.S. military to interpret the aftermath of the firefight and one expert on school safety.

### **Limitations**

While real firearms were used in the simulation, there is no way to safely enact these scenarios without some form of protective equipment. As such, masks, goggles, and other protective equipment was used. This equipment does have the ability to interfere with the body mechanics of the participants and keep them from reacting as quickly or accurately as if they were not wearing the equipment.

The original methodology called for the use of a paintball gun instead of simunitions in the hands of the "active shooter" in an attempt to keep as many people as possible from needing full protective gear, but such a gun was not available for this test. Future tests should seek to avoid requiring as much protective gear as possible while still maintaining the safety of the participants.

Another limitation that is inherent in the scenarios is that there was no true "surprise." All participants knew what was going on and what was about to happen, and the time constraints of the facility and participants meant that lengthy scenarios (where boredom would permit surprise

to be a factor) were not possible. While surprise was definitely an important factor in two of the tests, the other two were designed so that surprise was not an important factor in the reaction of the defender.

The final issue is with participants learning from the scenarios. There were unfortunately insufficient participants to run the scenarios as imagined, with only one group acting as the teacher or guard and kept in a separate room from the activity to keep the events a secret until they were involved. So, as the scenarios played out again and again the participants learned from the mistakes of the previous shooters and became better at their respective roles as the scenarios progressed. This could be fixed with a larger pool of participants.

While there were significant limitations to the experiment, it is the belief of the staff of this simulation that it provides the most accurate representation of how a person would react to a genuine school shooting in these scenarios ever studied.

## Participant Data

Participants were asked to voluntarily provide some background on their shooting experience in order to assist with the analysis of the scenarios. The following data was collected on the 11 participants:

<b>Participant</b>	<b>Concealed Carry Permit?</b>	<b>Law Enforcement Officer?</b>	<b>Military Experience?</b>	<b>Firearms Experience?</b>
1	Yes	No	Active	Some
2	No	No	No	10 Years
3	Yes	No	No	30 Years
4	No	No	No	Limited
5	Yes	No	Past	15 Years
6	Yes	No	No	3 Years
7	No	No	No	35 Years
8	Yes	Retired	No	30 Years
9	Yes	No	No	10 Years
10	Yes	No	No	7 Years

11	Yes	No	No	3-4 Years
----	-----	----	----	-----------

## Scenario 1 -- Armed Guard at Front Door, No Warning

### Background

Scenario 1 consisted of a single armed guard seated behind a desk, facing the entryway. This position is consistent with many current configurations for schools, enabling the security guard to watch the front door and challenge visitors to the school during the day. Unarmed participants were then walked out an opening in the wall and past the guard until the shooter emerged from the opening and engaged the guard. The guard was not aware of exactly when the shooter would emerge and therefore had no advanced warning.

This scenario illustrates the ability (or lack thereof) of an armed security guard to interdict an active shooter if they have no advanced notice that the shooter is approaching. In cases where the shooter had carried their firearms inside concealed, or where the guard had no outside facing cameras to screen approaching visitors, the first notice that the guard would have of the shooter is when they entered the door and opened fire.

For situations where the guard had advanced notice of the shooter's approach, such as a locked front door or security cameras installed outside the school, Scenario 3 was designed to simultaneously test the ability for a teacher to react to an incoming active shooter and the ability for an armed guard to interdict the attacker, as both scenarios focused on the ability for a given person to defend a doorway.

### Execution and Results

This scenario was enacted near the end of the day, and as such only three iterations of the scenario were enacted. However, in all three iterations the shooter was able to neutralize the guard before the guard was able to identify and engage the shooter.

The data about this scenario was improperly recorded and no video was recorded, and as such will be discarded. The results from this scenario are based solely on the opinions of the subject matter experts present at the time of the scenario.

## Scenario 2 -- Armed teacher with No warning

### Background

Scenario 2 involves a shooter making entry without warning into a classroom setting where the teacher is carrying a concealed weapon. As previously mentioned, students were encouraged to exit and enter the room at random to keep the teacher from knowing when the shooter would enter the room. The teacher had no advanced warning of the shooter's presence, and was not given any instructions or training on how to react.

This scenario was designed to mimic the typical "active shooter" scenario that people imagine when describing a school shooting, entering a classroom with no warning. This scenario was partially played out in an ABC news story that involved simunitions firearms and a concealed carry weapon in the hands of a student, but the bulky safety equipment (in addition to other issues) were considered by many to make the results unreliable.

While this scenario represents the highest probability for the failure of the teacher (as the attacker would theoretically have the upper hand and be able to neutralize the teacher before they were able to respond) it is in reality the least applicable to real life. For example, in the Sandy Hook Elementary shooting the teachers had ample time to prepare their classrooms and were aware that an armed attacker was coming. However, in an effort to identify all possible combinations of scenarios this one was included.

### **Execution and Results**

The results of this scenario were mixed, and depended on the level of training of the shooter and teacher.

<b>Iteration</b>	<b>Shooter</b>	<b>Defender</b>	<b>Shooter Hits Scored</b>	<b>Defender Hits Scored</b>	<b>SME Opinion of Winner</b>
1	4	2	5	1	Defender
2	1	5	4	1	Defender
3	7	3	1	2	Defender
4	9	6	0	2	Defender
5	10	8	5	0	Shooter

For example, round 2 saw participant #5 in the role as teacher, a person with prior military experience and current concealed carry licensee, facing participant #1 as the shooter who was active military. While the shooter did inflict casualties in the room, the teacher was able to successfully engage the shooter and keep them from entering the room.

The theory for this result and similar ones is that since the door to the classroom opened towards the class instead of towards the teacher, the students were the first in the line of fire and therefore the shooter fixated on them and gave the teacher time to draw their weapon. Otherwise, if the teacher was directly targeted or was the first to be seen they were immediately neutralized by the shooter.

On the other hand, round 5 pitted a national-level competition shooter as the shooter against an older retired law enforcement officer as the teacher. The shooter was able to neutralize the teacher before they were able to even begin to draw their weapon.

For this scenario, the shooter knowingly targeted the teacher since they had a concealed handgun. Future experiments should randomize the position of the responder, including students with a concealed handgun as well as teachers and armed guards some distance from the classroom in order to limit the shooter's knowledge of where the defender is located.

While not all teachers were able to successfully stop the shooter, it appears based on the data that armed teachers would be beneficial in situations where there is no advanced warning. Even though the teachers were not 100% successful, they did display the ability to reduce the technical vulnerability of the classroom by providing a meaningful and immediate response to the shooter.

If the teacher is ineffective then there is no difference from the baseline "risk" associated with a shooting scenario such as this, as the natural tendency seemed to be for the students to retreat and not get in the line of fire between the teacher and shooter. Thus, the probability of students being shot accidentally by a firefight in the classroom is very small.

If the teacher is effective in stopping the shooter (as they were in some situations) then there is a definite decrease in the potential body count in the room as the threat has been completely removed.

While deterrence isn't something being investigated by this experiment it is also important to note the probable psychological effect that the knowledge of an immediate armed response would have to prospective active shooters.

Future experiments should also investigate whether the direction that the door opens has an impact on the effectiveness of the teacher.

## **Scenario 3 — Armed teacher with Advanced Warning, "Lockdown" Procedure**

### **Background**

Scenario 3 was identical to the configuration of scenario 2 with the exception that the classroom had a few seconds warning that there was a shooter coming. When the teacher heard gunshots, they were instructed to perform a basic “lockdown” procedure as implemented in some schools that consisted of gathering the children in one corner of the room before attempting to interdict the shooter as they entered the room.

For the scenario, the “lockdown” procedure was to gather all of the students in a single corner of the classroom away from the door. This is similar to the procedure implemented in numerous schools around the state of Connecticut, as the person behind implementing those “lockdown” procedures was one of the people on the staff for the event.

Once the “lockdown” was complete, the teacher was given no further instructions on how to defend the classroom. They were simply handed a handgun and instructed to improvise.

This scenario is the most applicable to the Sandy Hook Elementary shooting, since it both accurately depicts the level of advanced warning that the teachers had before the shooter attempted to enter their classroom and is one of the solutions to the current issue of school safety being proposed.

**Execution and Results**

Iteration	Shooter	Defender	Shooter Hits Scored	Defender Hits Scored	SME Opinion of Winner
1	1	7	1	1	Defender
2	2	4	1	1	Defender
3	9	3	0	2	Defender
4	5	11	0	1	Defender
5	9	6	0	1	Defender
6	9	6	3	1	Defender
7	9	6	1	4	Defender

NOTE: Iterations #2, #5 and #6 saw the shooter experience a technical malfunction and required the scenario to be reset.

In every instance where scenario 3 was played out, the teacher was able to successfully keep the shooter from entering the room and often without a single casualty among the students or even a single round fired on the part of the shooter.

As a note, “success” for this scenario was not necessarily that the shooter was killed but that they were driven away from the door. Deterrence to entry is a sufficient outcome to call the iteration in favor of the defender, since one would assume that if a participant is reluctant to enter a room due to the possibility of them being slightly bruised one could assume that the shooter would do the same to the threat of imminent death.

In this scenario, in the opinion of the subject matter experts, an armed teacher was extremely effective in stopping an active shooter. In every iteration the teacher had sufficient time to prepare the class and was waiting for the shooter, gun drawn, when they entered the room. Even inexperienced defenders, such as during iteration #2 when the defender was an inexperienced shooter with no training on self defense, the defender was able to improvise a defensive strategy that successfully kept the shooter out of the classroom.

One of the major limitations of this scenario was the ability for the participants to learn from the mistakes and actions of the current shooter or teacher. Since the sample size was too small to properly rotate the participants each person saw the entire scenario and was able to formulate their own defense based on that previous knowledge. Future experiments should seek to keep the participants in the dark about the scenarios as much as possible.

## **Scenario 4 — Armed Response to Active Shooter, Single Responder**

### **Background**

Scenario 4 began with a shooter entering a classroom full of students with no armed teacher present and opening fire. On hearing the gunshots, an armed responder (either an armed guard or another teacher, for the purposes of this experiment it was not important) who was standing 25 yards from the classroom door was instructed to rush to the scene of the shooting and engage the shooter.

This scenario is consistent with both an armed guard and an armed teacher responding to a secondary location to engage an active shooter. The scenario is a logical extension from Scenario 2, where a classroom was attacked without advanced warning. In this case, the sound of gunshots is the advanced warning and rather than waiting in a classroom (scenario 3) the defender decided to engage the shooter at that other location.

This scenario can be used both for an armed teacher and an armed security guard since both would generally be armed with handguns and have to approach the scene in the same manner, the only difference is their starting location.

### **Execution and Results**

For this scenario, no instructions were given to any participants beyond those initial instructions. This unfortunately created some issues with the way the iterations developed, which will be discussed in a moment. The reason behind this lack of information was to allow the participants to react as normally as possible, but the “open ended” nature of the scenario enabled too many external factors to give very good data.

<b>Iteration</b>	<b>Shooter</b>	<b>Defender</b>	<b>Shooter Hits Scored</b>	<b>Defender Hits Scored</b>	<b>SME Opinion of Winner</b>
1	2	5	1	4	Defender
2	4	8	0	3	Defender
3	1	7	6	1	Shooter
4	3	11	2	0	Shooter
5	8	9	0	0	[N/A]
6	8	9	3	1	Shooter

Like scenario 2, the successful interdiction of the shooter depended on the level of training of the participants.

When responders were participants with high levels of training, such as a military background or law enforcement training, they were successful in immediately engaging and stopping the shooter. The best illustration is in the following YouTube video, which shows an ex-military individual with a current concealed carry license engaging the shooter.

<http://www.youtube.com/watch?v=I5c7cYeo8xc>

However, when responders had little or no training the results were less impressive. Not only did some responders fail to effectively engage the shooter, but in one instance they actually shot a “student” that was fleeing the room instead of the shooter.

One unexpected variable was the response of the unarmed participants. In some scenarios the participants rushed from the room and flooded the hallway, making it difficult for the responder

to get to the shooter and identify them. As mentioned, in one instance the defender accidentally shot a student instead of the shooter.

Another unexpected variable was the aggressiveness of the unarmed participants. Iteration #5 had to be re-run due to a participant charging the shooter and wrestling the firearm out of their hands. While that's an excellent result for a school shooting, it doesn't quite help in the analysis of the intended scenarios.

For this scenario, an armed response was only completely effective when the responder had adequate training. Those with insufficient training were able to engage the shooter as well, but results were less impressive.

## Conclusion

This experiment was intended to be a preliminary test, mainly interested in providing a proving ground for the methodology and scenarios selected for testing before being implemented in a large scale test at a later date. At no point was this intended to settle the question of whether an armed teacher or armed security guard would be beneficial for an active shooting scenario once and for all. Given the limitations of the methodology and procedure used for these tests, at most this experiment should be taken as an example of how these scenarios might be played out and not a statistically significant result.

In terms of verification of the methodology and testing procedures, this experiment was a complete success. The basic premise of the methodology appears to be sound, and while the specifics of how the scenarios should be enacted with a given pool of participants needs work it nevertheless proves that valid data can be extracted from these tests.

Data collection was one area that needs improvement. While having the subject matter experts on-site to evaluate the iterations was a good step, having full video of every single iteration needs to be a requirement for these experiments going forward. In addition, photographic records of the impact locations for every round would aide in determining the winner later, when compiling the report.

In terms of the question this experiment is designed to ultimately answer, based on the limited data collected from this experiment it appears that an armed teacher would indeed be a benefit and save lives in an active shooter scenario. Compared to the baseline risk of an active shooter at a school, the presence of an immediate armed response lowers the vulnerability of the area and therefore increases the probability of interdicting the shooter before they can inflict as many injuries as they would had they been unopposed.

The caveat to that statement is that the teacher or guard must be properly trained in order to be most effective. Maximum effectiveness of an armed teacher of any skill level is achieved with advanced warning of the approaching shooter and implementation of a classroom "lockdown."