INTRODUCTION
The use of video feedback in kinesthetic performance is widely practiced. Whether dissecting a baseball players’ swing or critiquing the biomechanics of a quarterbacks’ throw, video feedback has been an excellent tool for the athlete to see exactly how they performed a particular skill. Typically, that feedback is used to enhance one’s own performance and rarely is the use of video used to instruct a skill. Video feed-forward is a type of instruction used to show a particular task and not what the individual has already performed for critique or improvement. While video instruction seems to be mostly used within the medical field, it has been utilized recently and frequently within physical education classes. Video instruction used in physical education is to provide students a view of their own performance or feedback as to what they have done (Silverman, 1997), or to provide instructors/coaches the proper steps to instruct others, not necessarily feedback on their own performance (Aaberg, 2001). A study by Blomqvist, et al, 2001, looked at improving badminton skills through the use of video; however, the group reviewed videos that were largely based on strategy and not basic biomechanics on how to perform the correct movement.

It is well documented in the medical field that video instruction can be utilized to enhance skills needed to develop proper techniques when administering a procedure, for example, Leopold, et al (2005) discussed the confidence and competence of medical practitioners when executing an injection into the knee joint. The study concluded that even low-intensity forms of instruction could enhance a person’s confidence and competence when performing the skill. Another study by Krouse in 2000 found that video modeling/video instruction to nurses can also be beneficial and cost effective in delivering standardized information to more patients in a timely manner. This pertains to information/instruction given to students looking to accomplish a specific task and shows the importance of additional instruction when increasing a student’s ability in a particular field. Krouse went on to conclude that “the utility of video modeling instruction holds good promise for application to clinical practice in facilitating knowledge acquisition, reducing preparatory anxiety and improving self-care practices.” And again, Braslow et al. (1997) devised a video to teach CPR to students in their own home, which was used to train a group of lay people. After critiquing his videos and presenting the video instruction a second time to a different group, he concluded that both groups that had been presented videos as instructional tools performed CPR more competently and more effectively after training, than those that were only given the information from an
instructor-led teaching method. So effective is video instruction that the American Heart Association as well as the American Red Cross utilize both traditional instructor-led teaching and video instruction to enhance learning and proper mechanics. Dubrowski and Xeroulis reported in their 2005 study that the results found when looking at the technical skills of suturing and knot tying wounds that video instruction can be used as a guide to develop pedagogically sound instructional videos for a novice learner.

METHODS
The project relied on the help of COL Michael Hendricks from the Geography and Environmental Engineering department. COL Hendricks was able to walk the trails and map the terrain. With the created maps, areas that were more technically challenging than others were identified and a video link of Mr. Jason Suby, DPE Cycling Instructor, completing those tasks was embedded. With the help from Dr. Nate Zinnser, Director of the Performance Enhancement Program, a helmet camera with a high definition lens was obtained and worn by Mr. Suby. Mr. Suby was able to ride with the helmet and create first person videos that give the cadets an idea of what they are going to traverse. Mr. Suby was also recorded from a side angle to view his body position as well as what the bike is doing. The advantages of the side angle videos over the point of view videos are that students get a better sense of depth when traveling on a bike; however, with the point of view videos one can get a great idea of what the student should expect to see.

In addition to the videos, two surveys were created. Both surveys were kept confidential, but students were asked to complete the surveys which took no longer than five minutes of their time. The first survey was to gather as much information to see how apprehensive the students could be when riding a mountain bike during the class. The second survey was used to gather information regarding watching the videos that were created and then riding the trails that were taped, this survey was used to gather information regarding if the cadets felt more comfortable after viewing the videos and if they were successful in accomplishing the class goals for that lesson by grading themselves compared to the grades assigned by the instructors involved in the class.

RESULTS
Survey #1:
A simple 8 question survey was sent out to a cycling class which was comprised of two sections, a mountain bike portion and a road bike portion. Twenty students were enrolled in the class that spent 5 weeks (12 classes, 9 on the mountain bike) learning how to ride a mountain bike and experience riding the trails at West Point. 7 of the 20 students filled out the first survey (35%). Of the 7 students that completed the first survey, three chose to take the class while the others were placed in the class. All but one student reported that they have ridden a bike in their past, but only 3 of the 7 reported that they had partaken in riding a mountain bike in the past. When asked to rank their comfort level from 1-10 on various bikes (Road, BMX, and Mountain), the cadets reported an average comfort ranking of 7.142 on a Road Bike, 3.286 on a BMX bike, and a 6.571 on a Mountain Bike.

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An eleven question survey was then requested for the students to complete after they had completed the first two mountain bike trails that were mapped. The goal of this survey was to get a sense of whether the videos aided in comfort level while riding the particular trail as well as if watching the videos improved their body positioning while riding a mountain bike in class, as the videos specifically identified going over the obstacles that the students were going to see on the trails. Of the 20 students enrolled in the class 13 returned the second survey. Of the 13, only 3 reported watching the videos compared with 10 negative responses (23%). Reasons for not watching the videos were that 9/10 stated that they didn’t have time or forgot to, while only one participant stated that they didn’t feel they needed to watch the video, possibly due to previous experience riding trails on a mountain bike.

Of the positive responses, all felt very comfortable. When ranking their comfort level on a scale of 1-10, their comfort level was an 8.33 when riding after watching the videos, while the group that didn’t watch the videos had an average comfort level of 6.7. When posed the question, “where you able to reach the goal of the day?” the cadets that watched the video all responded that they had, while 9 out of 10 students from the group that didn’t watch the videos stated that they had achieved the goal as well.

Both groups were asked to grade themselves after their ride on a scale from 1-100. The group that watched the video graded themselves on average at a 92.33 %, with a range of 84-100, while the group that did not watch the video graded themselves on average at a 90.30%, but the range was greater at 65-100, with a mode of 85 & 95 (2 each).

Furthermore, the instructors had an average grade for the class of 97.595 with a range of 75 – 100 and a mode of 100 (8).

DISCUSSION
The idea for this topic came about because in the USMA DPE Cycling class, students are only told what a particular trail may look like. Descriptions are given in regards to what types of obstacles a student may see, but that can make it difficult to conceptualize. With that, the thought of apprehension was raised and how that may affect the students’ performance. At the same time, if a student were to see what skills should look like, rather than be told what to do, they may understand what the correct biomechanical pattern should resemble. Often times in riding a mountain bike, students need to weigh down the front wheel in an effort to clear the rear wheel over an obstacle. The Physical Educator has had to verbalize this and then show the students. That visual aid may occur quickly, and when that is combined with an apprehensive student, it may lead to an incorrect interpretation of what the correct technique should be. The idea of providing an instructional tool to the student prior to attending class seemed like a good idea. The student would be able to not only see what task was to be covered in class and how to perform that task, but also they would be able to see the terrain that will be covered on the day of the class, and ultimately perform better than they thought they might have performed.
With many studies in the medical field looking at instructional videos showing the proper techniques it is conceivable to believe that technique would find its way into the physical education realm, however, with various movement patterns from one person to another, it may prove fruitless and even counter-productive at times to do so. So often do we talk about getting away from the “cookie-cutter” approach, but in the instance of positioning on an apparatus or compressing a certain depth, video instruction seems to play a positive role in students understanding and comprehension. With that said, a student’s apprehension towards the unknown can often times be limiting when attempting to achieve a goal. Much like the emergent situation that necessitates the use of CPR or the use of an AED, instructional tools that can shed light on what a situation may look like, or what could be seen in that scenario have shown to help a person calmly work the issue without causing too much fear, which was another goal of this project and future projects with the class.

LIMITATIONS
The PE 230 Cycling class is offered during 3 of the 4 rounds at West Point. Due to the delay in topic chosen by the author, the study was aimed at only one round in an effort to present the topic. Ideally, the study would have comprised of several years worth of students to gather a better sample size. The current study can be useful as a pilot study to correct the two surveys that were presented as well as to work out any errors that came up such as students watching the videos.

While 35% of the class returned the first survey and 65% returned the second, only 15% of the class reported that they watched the videos which is not reliable enough to prove that video instruction for mountain biking is beneficial. Interestingly though, while the mean comfort score was a 6.571 when entering the class (obtained from survey 1), those that watched the videos reported a comfort score of 8.33 compared to those that did not watch the videos who reported an average score of 6.7 (obtained from survey 2). While the class covers several trails in the mountain biking portion in PE 230, only the first two trails were recorded and shown to the class. This was due to weather and lack of time. The class has a second half that covers the road bike and therefore leaves little time to get to other trails, however, this particular group of students had great success on the first two trails and moved up to the more challenging trails quicker than classes before, and thus, having videos of those trails could have possibly aided in the study as well.

Going forward, this study will be useful as a database for videos was created and embedded in the trail maps. Those clips can be viewed at the following link: http://usma-portal/collab/uscc/DPE/Instruction/pe230/Lists/PE230%20Cycling%20Videos/AllItems.aspx. Also, clips from various trails that are not covered in the class are also able to be viewed at this link: http://usma-portal/collab/uscc/DPE/Instruction/pe230/Instructional%20Videos/Forms/AllItems.aspx. Furthermore, with an average grade on the two trails of a 97.595 we may need to look at a more challenging grading matrix. With only two instructors in the class we rely heavily on cadets reporting to us their errors. While we operate on the honor system, what the instructor deems an error, the student may not. For example, typical downhill position
comprises of knee slightly bent to a 20 degree angle, feet positioned at 3 & 9 o’clock, heels pointing down with the hips aligned over the posterior of the seat saddle, many cadets fail to do this but do not report the error due to lack of understanding. To improve this, video feedback may be a useful tool and another study should be aimed at utilizing that to improve instruction as well.

CLOSING
In closing, while this presentation will not be published due to lack of sample size, and multiple errors, I found that I was able to enhance my instruction by creating this database. Had more cadets reviewed the materials prior to riding the terrain, perhaps their comfort scores would be increased and perhaps their techniques would have improved, because as the class goes on, the instructors are constantly reminding students of errors that the students may not be grading themselves on (for example looking down at the front wheel or just in front of the front wheel instead of looking down range at the next obstacle and planning how to traverse it). We often discuss cadets coming to class unprepared, and this seems to be another hurdle that cadets choose to not meet. As instructors it is our duty to create a positive learning atmosphere by bringing our expertise and our experiences to the table so that students can absorb or learn as much as they can. When students fail to do the basic pre-class work and are not prepared the tendency is to fall behind. In this population, we are fortunate enough to have physically fit cadets who can adapt kinesthetically to most environments. I would be interested to see how this study would fair at an institution where most students do not partake in physical activity.

REFERENCES

THE USE OF VIDEO BASED INSTRUCTION IN PHYSICAL EDUCATION CLASS – Mountain Biking

*By Drew Van Dam – Instructor, Department of Physical Education*

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The goal of this project is to curb the fear factor we see in mountain biking. A typical class usually starts out with a brief of where the ride will take place, what obstacles will be seen, how to go over, under, around, and sometimes through those obstacles are discussed, and then we practice those techniques.

The model is somewhat easy to comprehend and is somewhat effective in that cadets tend to understand what they are about to undergo. However, my thoughts are that if there is an interactive website for the cadets to go to and watch videos of the upcoming lesson prior to class, then not only will instruction be improved, but the classroom brief will also be enhanced by having cadets participate with questions.

To do this, my goal is to set up a website using the Geography & Environmental Engineering department on campus. We will start by walking the trails that we typically ride. At each trail there are 3-5 different goals/objectives the cadets are to perform. These objectives would be indicated by a red box that the cadets would click on and view the task and also the proper way to overcome the obstacle.

To measure the feedback, I will use feedback in class as well as student surveys to base the overall opinions of the videos and whether the cadets’ felt that previewing the course helped at all.

My plan is to research articles that pertain to this subject, set up the website and videos, and utilize cadet survey feedback to see if this is beneficial or not.
THE USE OF VIDEO BASED INSTRUCTION IN PHYSICAL EDUCATION CLASS – Mountain Biking

Survey #1

Bicycling Background:
1) Do you have any experience on a bike?
   a. Yes
   b. No
      If you answered no, skip ahead to question #5

2) What type of biking experience do you have?
   a. Leisure
   b. Triathlons
   c. Recreational BMX
   d. Recreational Mountain Biking
   e. Recreational Road Bike
   f. Competitive BMX
   g. Competitive Mountain Biking
   h. Competitive Road Bike

3) Do you have experience on Mountain bike trails, hills, dealing with obstacles, or jumps?
   a. Yes
   b. No
   c. Other, please explain

4) Have you ever had any previous instruction on a road, mountain or BMX bike?
   (Circle the type of bike)
   a. Yes - Road Bike  Mountain Bike  BMX bike
   b. No

5) Did you select this as your Lifetime Sport?
   a. Yes
   b. No

6) What would you say your comfort level on a Road bike is?
   1….2….3….4….5….6….7….8….9….10

7) What would you say your comfort level on a BMX bike is?
   1….2….3….4….5….6….7….8….9….10

8) What would you say your comfort level on a Mountain bike is?
   1….2….3….4….5….6….7….8….9….10
THE USE OF VIDEO BASED INSTRUCTION IN PHYSICAL EDUCATION CLASS – Mountain Biking

Survey #2

1) Did you watch the video on the website?
   a. Yes
   b. No

   **If you answered no, skip ahead to question #6**

2) Did watching the video prior to class help you today?
   a. Yes
   b. No

3) Did you feel comfortable knowing that you have seen the terrain and the goals of today’s lesson prior to riding?
   a. Yes
   b. No

4) How did the video affect your performance on the trail?
   a. I was able to complete all tasks with ease
   b. I could get some of the tasks, but not all
   c. I wasn’t able to reach any of the tasks on the trail today

5) Were you comfortable on the trails today?
   a. Yes
   b. No

6) What would you rank your level of comfort from 1(least comfortable) to 10 (most comfortable) in terms of anxiety
   1….2….3….4….5….6….7….8….9….10

   **If you watched the videos, please skip ahead to question 10****

7) Did you envision the trails differently than they actually were?
   a. Yes
   b. No

8) Why did you not watch the video before class?
   a. Forgot, didn’t have time to, too busy, etc.
   b. I don’t feel I have to watch the video/s

9) Do you think not watching the video affected your abilities?
   a. Yes
   b. No

10) Were you able to reach the goal/s of the lesson today?
a. Yes
b. No

11) On a scale of 1 – 100 how do you think you performed, or how would you grade yourself (please write in)?