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Video-based debriefing enhances reflection, motivation and performance for police students in realistic scenario training

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Abstract

The purpose of the study is to explore the relationship between video-supported debriefing and student police officers' performance in realistic scenario training? Two groups conducted two weapon-scenario sessions. One group used video-based debriefing in addition to the regular debriefing and one did not. The result showed that the students that used video increased their reflection regarding possible solutions to the scenario. The video group also increased their motivation to train the skills involved in the scenario. The expert assessment made by the weapon instructor showed that the video group improved their performance in the second scenario session, which was not the case for the traditionally debriefed group.

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Keywords: realistic scenario, reflection, simulation, video-based debriefing

1. Introduction

The police profession is quite demanding. As a police officer one can at any time be exposed to threats of deadly violence or actual deadly violence to oneself, colleagues or the public (Andersen, Litzenberger & Plecas, 2002). To prepare students for situations they may meet in their coming working lives, simulations are nowadays common in professional training (Issenberg, McGaghie, Petrusa, Gordon & Scales 2005). This is also the case in modern police education in which training in simulation scenarios or in other words in realistic scenarios is a vital part (LittleJohn-Shinder, 2002; Artwohl & Christensen, 1997). A key question for educators in police training is how to manage the scenarios in a way that maximizes the learning outcomes for the students. This was also a vital question for us as teachers at the police academy at Umeå University where scenario training like elsewhere is frequently used in the teaching. In this paper we report on findings from a study using video as tool for enhancing students' performance in realistic scenario training. Theoretically the study draws on Schön's work about reflection and learning and recent research on learning in simulations and scenario training. In his work *Educating the reflective practitioner* Schön (1987) describes learning as changes in actions, inner structures and processes such as cognition, attitudes and feelings. Schön puts the focus on the activity and the reflection of the learner, who has to be active. He uses the concepts of reflecting in action, which is sort of thinking on your feet during training, and reflecting on action,

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which is retrospective and takes place after the training. (Schön 1983; 1987; 1992). In an overview of learning and reflection in professional development, Moon (1999), found reflection as an essential ingredient for success. She concludes that though the concept is used in different ways, it seems as if reflection is a tool that can transcend more usual patterns of thought to enable a critical stance or an overview. Furthermore, research on scenario training highlights reflection as a key feature for success, but it is also important to establish clear and appropriate goals with adjusted proficiency levels, resources for feedback, opportunities to train the skills needed and some tool to measure the outcome of the training (Gauger Hauge, Andreatta, Hamstra, Hillard & Arble. 2010; Dieckman 2009; Naylor, Hollett, & Valentine. 2009; Ericsson 2008; Stefanidis, Korndorffer & Heniford. 2007; Heinrichs, Lukoff, Youngblood, Dev, Shavelson & Hasson 2007; Issenberg *et al.* 2005).

Aware of the research on realistic scenarios we let our students use a structured evaluation/reflection model called After Action Debriefing (a.a.d) (Druckman & Bjork, 1994) after each scenario training. The aim was to help students to reflect on and evaluate their performance in the scenario. The reflection should make the students aware of shortcomings in their performances and lack of knowledge and skills, which would help them solve the problem in the scenario, but also highlight what they did well. Now our question was if the students could get more out of the realistic scenario training if we gave them better tools for reflection. Schmidt & Wrisberg (2001) divide feedback into intrinsic feedback and external feedback. Intrinsic feedback is the information one constructs oneself, and includes for instance one's own feeling and self-correction. External or additional feedback is information that comes from outside such as verbal or video feedback. Guadagnioli, Holcomb and Davies (2002) define feedback through video as argued, post-response error information about the movement. Issenberg *et al.* (2005) conclude in their research overview that feedback or knowledge of the result of one's performance is the most important feature and that this can be given post hoc as viewing of video film. Rönnholt, Holgersen, Fink-Jensen & Nielsen (2003) have shown that video feedback can improve the understanding of e.g. communication and interaction in the learning process. Studies also show that video and sound are a form of feedback that can be effective for learning and reflection, if the information is clearly related to the learning goals (Hattie & Timperley, 2007).

So, drawing on Schön's theories and on current research concerning successful scenario training, and video as a potential tool for enhancing reflection, the aim is to explore the relationship between video-supported debriefing and student police officers' performance in realistic scenario training. Our research question in this study is to explore if video-supported debriefing can improve student police officers' reflection, motivation and performance in realistic scenario training?

2. Design of study

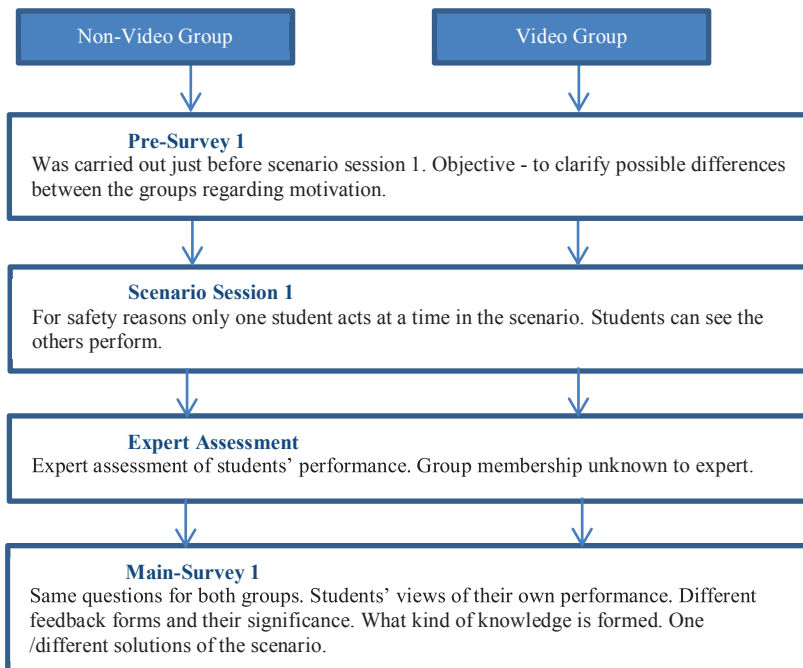
In the study we compared two groups at the police college in two scenario sessions where one group used video-based debriefing and one did not. The groups will henceforth be labelled the video group and the non-video group. A total of 12 students initially constituted the groups, but due to some students dropping out nine participants, four in the video group and five in the non-video group, remained in the study. Data was collected through four different surveys (two pre-surveys and two main surveys), through expert assessment of performance and through video filming (fig. 1).

The purpose of the pre-surveys (one and two) was to investigate students' motivation before the scenario session to clarify if any differences existed between the groups. The main surveys were conducted immediately after each scenario session. Main survey one was the same for both groups to get an accurate measurement before the different debriefing forms were implemented. It included questions concerning feedback forms, debriefing, their opinions about their performance and what contribution the scenario session had made. The same questions were asked in main survey two but included also questions of what the students had done to prepare for scenario session two. The objective of main survey two was to study how the implementation of different debriefing models had affected

students' reflection and performance. The expert assessment of the students' performance was conducted by a professional weapon instructor with long experience of teaching and judging students' performance. In the assessment he considered four different criteria; weapon techniques, self-protection techniques, tactics and communication. The criteria were summed up in an overall-performance judgment on a scale from one to five. The expert assessment of students' performance was made in both scenario sessions. To avoid being influenced in his assessment, the expert did not know which students belonged to the non-video group and which to the video group. The students did not get the results of the expert assessment after scenario session one.

In the scenario the students are standing outside an apartment with a suspect inside. The students are dressed in uniforms, have all their required equipment and are armed with fx-guns (fx = standard gun loaded with paintball bullets), and a baton. The students command the suspect to come out and at that moment they do not know if the suspect will be armed e.g. with a gun or knife or unarmed. The suspect can then behave in different ways when he comes out, for instance using force of different degrees or obey their command. The suspect can change his behaviour forcing the police student to change their tactics. The students act until they control the situation or the instructor says "break".

In the debriefing after the scenario session one both groups used the structured debriefing model (a.a.d), where they post-hoc recaptured and reflected on what happened in the scenario session. Each student gave his own view of his performance and also got the other group members' views of the performance. At the end of the debriefing they summed up what they had learned and what they needed to develop further, e.g. tactics, self-control, technical skills etc. The video-group had in addition to the a.a.d the video clips where they could see their own and the other group members' performance in the scenario as many times as they wanted. After the first scenario session the students had two weeks to train and prepare for the next session. The students did not get the results of the assessment of their performance in scenario session one. What they did during the period in order to improve their performance in the second scenario session was up to themselves to decide on and without interference from any teacher. The video group had access to the videos used in the video-based debriefing during the whole preparation period.



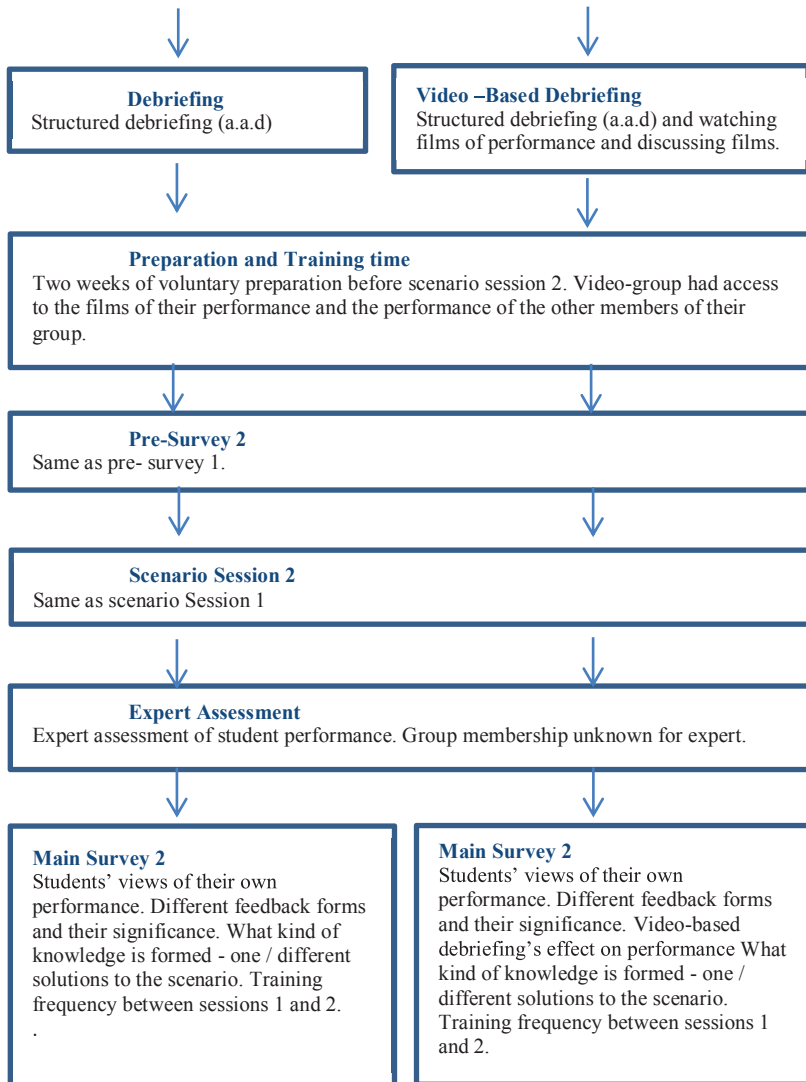


Figure 1. Overview of study design

3. Results

The purpose of the pre-surveys was to investigate if any differences existed between the groups regarding motivation when they started the scenario. In pre-survey one there were no differences in motivation between the groups, where all students said they had strong or very strong motivation. In pre-survey two, the video group showed increased motivation for participation compared to the non-video group (fig. 2).

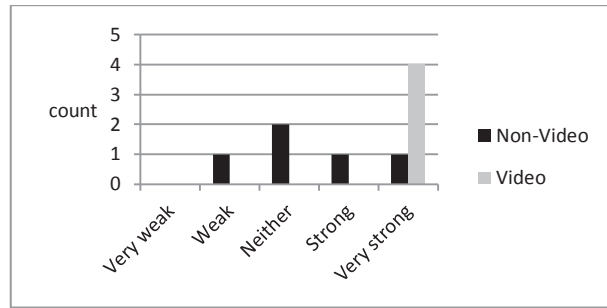


Figure 2. Motivation before scenario session two.

After scenario session one and before the groups completed their structured debriefing (a.a.d) and video-based debriefing, the groups ranked what factors were most relevant for their reflection on and development of performance in scenario session one. The ranking was the same in both groups with feedback from instructor as the most important factor followed by intrinsic feedback and informal feedback from the group (tab. 1).

Table 1. Factors of relevance for reflection and development of performance in scenario session one.

Importance	Non- video group	Video group
Most	<i>Feedback from instructor</i>	<i>Feedback from instructor</i>
Second	<i>Intrinsic feedback</i>	<i>Intrinsic feedback</i>
Third	<i>Informal feedback from base-group</i>	<i>Informal feedback from base-group</i>

When after the second scenario session (in main survey two) the students ranked the factors, they also had to take into account the debriefing forms, a.a.d for the non-video group and a.a.d and video-based debriefing for the video group. Again feedback from the instructor was ranked as the most important factor for the non-video group but video feedback for the video group. After scenario session one when the video-group had not yet used video-based debriefing, the ranking was the same for the two groups. Now when the video-group had used video-based debriefing after scenario session one and had had the possibility to use the vide-clips in their preparation for scenario session two, the video group ranked feedback from video as the most important factor for performance (tab. 2).

Table 2. Factors of relevance for reflection and development of performance in scenario session two.

Importance	Non-video group	Video group
Most	<i>Feedback from instructor</i>	<i>Feedback from video-debriefing</i>
Second	<i>Knowledge about the scenario</i>	<i>Intrinsic feedback</i>
Third	<i>Feedback from a.a.d</i>	<i>Knowledge about the scenario</i>

The significance of the video clips for their performance was also something students commented on in the questionnaires. One student said:

Great to be able to change what you thought did not work so well on the video clip. (Student from video group)

Concerning the training period, answers from the video group students showed both that they seemed to reflect on how to act and that they used the time to a greater extent to train the skills needed in the scenario.

The more times you train the more you learn, but then the video was a perfect tool to reflect on your own and others' performance in the scenario. (Student from video group)

The video helps me see exactly how I stand, walk and act – I therefore know what I need to practise. (Student from video group)

Felt that I needed to practise more to get the movements more automatic. (Student from video group)

These patterns could not be found in the answers and comments from the non-video group.

When the students answered a question regarding if they were stimulated to reflect on different ways to solve the problem in the scenario, they considered that this was the case. They felt that the instructor gave feedback in a manner that highlighted examples of different solutions. Both groups also stated that the scenario session in itself had given them opportunities to reflect on different solutions to the scenario. However, in their comments the video group seems to express it more clearly.

With a little guidance, I have in this way found a way that suits me best. (Student from video group)

It feels better to get yourself to figure out which solution is right for me. (Student from video group)

Regarding the students' performance in the scenarios we have both their own judgments and the expert assessments at hand. In the students' judgments of their performance in scenario session one they regarded their performance as "good" (the video group) or as "very good" (the non-video group). The non-video group was a little more pleased with their performance (fig. 3).

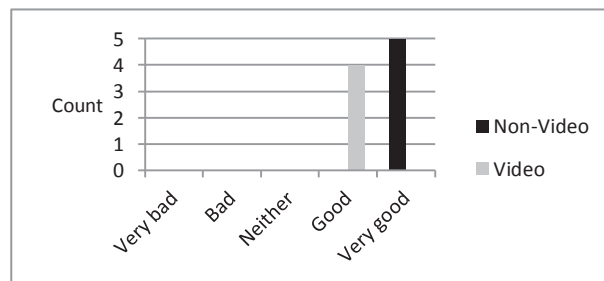


Figure 3. Students' judgments of their performance in scenario session one

When the students judged their performance in scenario session two, there was a slight shift in both groups. In scenario session two the students in the non-video group judged their performance as less good when we compare it with judgments from scenario session one, while the students from the video group judged their performance as slightly better than in their first session (fig. 4).

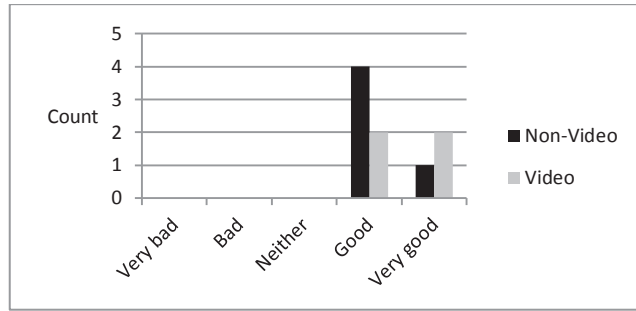


Figure 4. Students’ judgments of their performance in scenario session two

The expert assessment of the students’ overall performance is a little less positive than the students’ own judgments. According to the expert the non-video group performed slightly better compared with the video group in scenario session one (fig. 5).

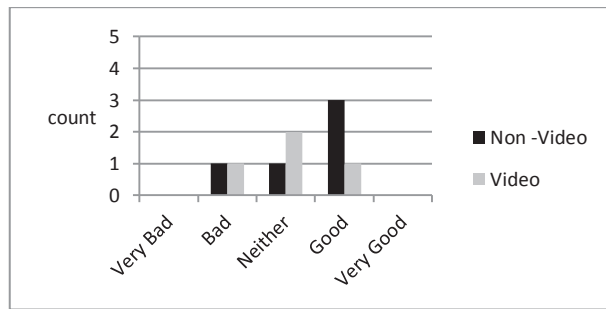


Figure 5. Expert assessment of performance in scenario session one

However, in scenario session two the video-group had improved its performance compared to session one to a great extent, while the non-video groups had not improved its performance at all (fig. 6). The results show that there was a shift in performance from scenario session one to session two considering which of the groups performed better. The students in the video group had all moved to “good performance” while the performance for the non-video group was unchanged at the same level as in scenario session one.

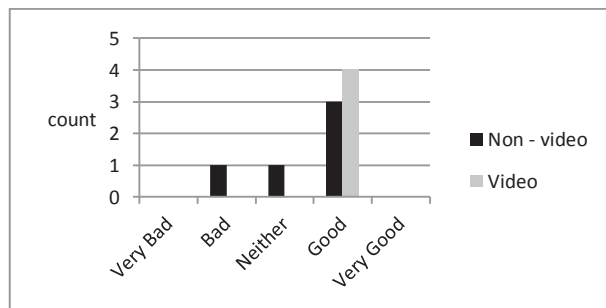


Figure 6. Expert assessment of performance in scenario session two

4. Conclusion

After the first scenario session the students' ranking of factors of relevance for reflection and development of performance was the same for both groups. Teacher feedback was ranked as most important followed by intrinsic feedback and informal group feedback. After the scenario session different debriefing models followed for the groups (without and with video films) and two weeks of voluntary preparation and training where the students in the video group could use the video films. After scenario session two a new ranking was made which included the debriefing models and now the ranking differed between the groups. For the non-video group teacher feedback still had the highest rank, followed by knowledge about the scenario and the structured debriefing (a.a.d). For the video group, however, the video-based debriefing had the highest rank, followed by the intrinsic feedback and knowledge about the scenario. It is interesting that in the video group the students' ranking of intrinsic feedback was considered to have a major impact on developing performance after both scenario session one and two. The result implies that video-based debriefing enhances students' intrinsic feedback, a result coherent with current research on successful scenario training (Gauger *et al.* 2010; Dieckman 2009; Naylor *et al.* 2009; Ericsson 2008; Stefanidis, *et al.* 2007; Heinrichs *et al.* 2007; Issenberg *et al.* 2005). The results also show that in the non-video group the teacher's feedback was considered of great importance for developing performance after both scenario sessions. In the video group, however, there was a decreased importance considering the significance of the teacher's feedback for developing performance when you compare students' ranking after scenario session one with ranking after session two. A reasonable explanation for this is that teacher's feedback is replaced by intrinsic feedback supported by the video-based debriefing and the use of the video clips in the preparation for scenario session two. Reflection is described by both groups as important for development of performance. But in their comments the video group expressed it more clearly. As we see it the results indicate that the video played a role of an effective post-hoc feedback tool, which corresponds to earlier research (Hattie & Timperley, 2007; Issenberg *et al.* 2005) and with Schön's concept of reflection on action (Schön 1983).

The results from our pre-survey show that there is no difference between the groups regarding motivation for participating in scenario session one. However, our results indicate that through the video-based debriefing the students in the video-group increased their motivation for training technical skills during the period between the first and second scenario session. The students in the video group also stated that they had become aware of the need for training to solve the scenario in a convenient way. From this we conclude that the video clips of the students' performance helped them to identify their shortcomings, and what they had to improve and thereby motivated them to train in a way that did not occur in the group where the students did not have the opportunity to see their own performance. In these results we rule out some sort of novelty effect as an explanation of the video group's increased motivation, since they had been accustomed to using video-clips earlier in their education.

To conclude, the most interesting result of this study is the difference between students' performance in scenario session two. The non-video group performed at the same level in both scenario sessions according to the assessment of the expert. The expert assessment also shows that the performance in scenario session two was improved remarkably by the group that had used video-based debriefing. These results correspond well to those of Stefanidis, Korndorffer & Heniford (2007) who imply that video, mixed with other feedback forms, can be a valuable tool for individual and faster learning. In their study as well as in ours video also seems to reduce the need for other feedback forms. Our conclusion is that the video-based debriefing helped the students to see flaws in their performance and lack of skills more clearly, improved their reflection on possible solutions to the scenario, and made them more motivated to train the skills needed to solve the task. But the results also raise some questions. How can we be more distinct in the explanation of the increased performance of the video group? Is it the case that we offered a tool that facilitates reflection on action, which gives a new consciousness of what is demanded in the

scenario or is it the case that video-based debriefing increased their motivation for training? Or is the explanation that the video-based debriefing helped them to be more motivated for participation in scenario session two than the non-video group? Or is it a combination of these and other factors? As we see it, further research is needed to answer these questions and others concerning the significance of video as a tool for developing performance and for managing scenario training in a way that maximizes the learning outcomes for the students.

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