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Virtual Afghan Village as a Low-Cost Environment for Training Cultural Awareness in a Military Context

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Abstract. While 3D virtual worlds, simulations, and serious games have been used for military training for a long time, there is a lack of research-based methods for using and creating such systems. In addition, the development process has traditionally been very resource consuming. The project Cultural Awareness in Military Operations seeks to address these challenges. The goal of the project has been to create and evaluate a low-cost, off the shelf, game-based simulation for training cultural awareness among military personnel in the Norwegian Armed Forces preparing for international operations. The project has also aimed at creating methodological guidelines and tools for developing 3D educational simulations for both military and civilian use.

Keywords: Military training, 3D virtual worlds, simulations, cultural awareness

1 Background (Pedagogy)

In this paper, we present the results of the project Cultural Awareness in Military Operations (CAMO). Its goal has been to create an inexpensive and flexible game-based simulation for training cultural awareness among military personnel in the Norwegian Armed Forces preparing for international operations (Afghanistan). The project is a joint effort of the Norwegian Armed Forces, the Norwegian University of Science and Technology, and the University of Oslo.

Cultural awareness in this context or *operational culture* is defined as "those aspects of culture that influence the outcome of a military operation; conversely, the military actions that influence the culture of an area of operations" [1]. Studying culture allows (theoretically) military units and partners to understand specific actions of locals, exert influence on the population, and improve interaction with other players in the area of operation. Practically applicable knowledge was conveyed through practical learning objectives that had been embedded into the training including a virtual Afghan village and local 'Afghans' in a virtual world (VW) built in Second Life (SL). The project also aimed at creating research-based methodology, guidelines, and tools for developing 3D educational simulations for the Norwegian Armed Forces

[2]. This was motivated by an identified lack of research-based methods for using game-based simulations in military training, both within the Nordic armed forces and among other allies (NATO) [3].

As a starting point for developing such a methodology, we studied publicly available literature and guidelines for operational culture training [1] and scenario methodologies, see e.g., [4]. These methodologies focus primarily on tactical tasks and not on operational culture, they have been developed further to be adjusted to the goals of the CAMO project [2]. Since the existing literature on Afghani operational culture is rather fragmented and/or classified, we used subject matter experts within the Norwegian Armed Forces and Norwegian academia as the major source of information.

The methodology for scenario development used for the CAMO project is based on a systematized set of learning goals and associated 'mini-scenarios', to obtain the maximum reusability of the content. The following major categories of learning goals were identified: *Tactics*, *Gender*, *Religion*, *Socializing* and *Language*. Each of the learning goals categories are split into sub-categories, providing a basis for the corresponding 'mini-scenarios'. Each of the learning sub-goals is further detailed with corresponding cues, appropriate reactions, typical mistakes, and typical responses in case of mistake. Though initially developed for the project setting (focusing on international operations in Afghanistan), this methodology is generally applicable for operational culture/cultural awareness training of both military and civilian personnel.

2 Background (Technology)

3D VWs and game-based simulations have been used for military training for a long time, demonstrating concepts and situations that are difficult, expensive or unsafe to represent efficiently in a classroom, including culture [5]. Examples of such systems for training operational culture include Tactical Iraqi and First Person Cultural Trainer [6,7]. They are typically very expensive to develop and primarily single-player, providing no or very limited support for collaborative learning and team training, with very few possibilities to modify and generate new scenarios.

Scenarios for the CAMO project have been developed according to the methodology mentioned in the previous section, providing requirements for the design and implementation of the virtual environment. Later, due to various constraints, trade-offs and re-focusing of the game's learning objectives, both the scenarios and environment design needed to undergo certain adjustments and simplifications.

Our focus during implementation was on low cost, short development time, and reusability. The overall project scenario describes the environment for the educational simulation – the Afghan village, while each mini-scenario requires additional specific content. The environment consists of the general content for creating the context (e.g., landscape elements, vehicles, furniture, authentic clothing) and specific content for mini-scenarios (a mosque, a school, a medical kit, a camera, a specific gun, and tableware). The implementation of the environment went through several stages. First, the required objects had to be created or collected. Practically, some of the objects and avatar clothing have been acquired from the SL marketplace as well as searching

free objects everywhere in SL. However, most of the specific content artifacts were designed from scratch to ensure authenticity. Second, when the basic objects (or elements) were collected and platform was set up, building and co-locating the typical elements started, reusing them in multiple places of the environment or joining in different combinations. After receiving feedback from the subject matter experts, some of them were modified or replaced.

3 Results and outcomes achieved

The simulation was evaluated in an experiment conducted at the Norwegian Military Academy on November 25, 2011. It was preceded by a 'rehearsal' session the week before and two-hour introduction training in SL technology. The participants included 14 cadets from the Norwegian Military Academy, playing roles of the Norwegian soldiers in the simulation (Figs. 1, 2) as well as six students and two teachers from the Norwegian Defense Language and Intelligence School, playing the roles of the Afghan civilians and interpreters and providing input to the scenario development.

Fig. 1. Conversation with the village chieftain

Fig. 2. Contact with local women

The role-play was organized in two rounds, including three debrief sessions conducted by an expert in Afghan culture. In each of the rounds, a group of the cadets/ 'squad' executed the mission, proceeding through the different scenes of the scenario. In the first round, the squad leader had a previous field experience from Afghanistan.

The data have been collected through observation of the role-play, screen-capture recording, pre- and post-questionnaires, and in-depth interviews of selected participants. The interview data provided further indications that the soldier' understanding of cross-cultural issues has improved over the course of the experiment. For example, one of the female participants noted: "I got very much out of it during a very short time", "plenty of aha-experiences". She also reported a high level of immersion in her role. Another, male participant believed that: "This (system) can provide several possibilities in a deployment environment to increase understanding among troops preparing for international operations".

It was not practically possible to access the participants' performance during potential deployment, but the questionnaire data give tentative evidence of an increased understanding of the cultural and religious aspects. At the same time, some of the soldiers disagreed that the experience in SL was suitable for correct evaluation of the threat situation due to the lack of 'crowd', which could possibly indicate an ambush. The cadets have been generally positive to the use of 3D VWs for training cultural awareness. On the overall, they reported that the simulation in SL has been a user-friendly, motivating, and fun experience. At the same time, the participants identified a number of limitations, especially, a limited selection of avatar gestures and body language that complicated expression and perception of certain cultural and social aspects. In addition, not all the players have been equally engaged in the game, something that affected their learning outcomes.

Following the feedbacks, the virtual Afghan village will be improved. It is planned to develop agents for crowd simulation of a 'regular' village life. Additional scenarios will be developed to account for a greater variety of learning goals and including both military and civilian personnel. At the same time, it is not possible to improve certain aspects such as limited body language and mimics range (inherent to SL) without significant increase of the cost. It is therefore necessary to consider a trade-off between the cost and quality in relation to different learning goals.

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