

1.2 Mission-Based Serious Games for Cross-Cultural Communication Training

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Appropriate cross-cultural communication requires a critical skill set that is increasingly being integrated into regular military training regimens. By enabling a higher order of communication skills, military personnel are able to interact more effectively in situations that involve local populations, host nation forces, and multinational partners. The Virtual Cultural Awareness Trainer (VCAT) is specifically designed to help address these needs. VCAT is deployed by Joint Forces Command (JFCOM) on Joint Knowledge Online (JKO) as a means to provide online, mission-based culture and language training to deploying and deployed troops. VCAT uses a mix of game-based learning, storytelling, tutoring, and remediation to assist in developing the component skills required for successful intercultural communication in mission-based settings.

1.0 INTRODUCTION

U.S. military operations in Afghanistan and Iraq in recent years have illustrated the critical importance of being able to communicate effectively across cultures in an ever-broadening array of situations central to Stability, Security, Transition, and Reconstruction (SSTR) missions. This is reflected in current military doctrine [4, 13] and has prompted numerous studies to identify needs for training and education to enhance cross-cultural and culture-specific capabilities for military personnel [1, 2, 10].

As part of the effort to address practical needs, the Office of the Secretary of Defense (OSD) directed the Joint Forces Command (JFCOM) Joint Warfighting Center's (JWC) Joint Knowledge Development and Distribution Capability (JKDDC) program to develop and field advanced technology-based individual training capabilities that include a Virtual Cultural Awareness Trainer (VCAT). VCAT is a web-based game accessible via Joint

Knowledge Online (JKO) that provides a web-based gaming simulation for joint warriors in multiple areas of responsibility (AORs), for multiple mission sets and scenarios, especially for SSTR. JKDDC's strategy is for VCAT to achieve the Alt 5 objective [3, 14] with a trainer that incorporates numerous types of gaming technologies other than large-scale constructive simulations, and innovative training methods, including storytelling scenario introductions, real-time remediation, virtual coaches, advanced sequencing, learning content navigation, and use of intelligent avatars for the purpose of stimulating critical thinking and learning in realistic mission contexts.

This paper will provide an overview of VCAT features and how they are employed for culture and language training targeted to increasing a trainee's capability to engage and communicate successfully and appropriately in cross-cultural settings.

2.0 VCAT AND SERIOUS GAMES

In order to fully understand the value of mission-based serious games, we must first understand what a serious game is and the impact and value of game-based training. A serious game is “the digital application of gaming technology, process and design to the solution of problems faced by business, government, academia and other organizations” [6]. Serious games use the same technology that is used in the entertainment video game industry, but are designed to focus on enabling the player, or trainee, to achieve a specific business- or goal-driven training outcome. Successful serious games provide trainees with immersive and engaging training [5, 12] that can be delivered on a variety of platforms, including the PC, across the Internet, and on personal handheld devices. Serious games provide a unique combination of challenge and engagement in a single training tool.

Research has shown that trainees are impacted positively by the time they spend playing a training game, as well as by their level of motivation and satisfaction when using game-based training. A more motivated and satisfied trainee will become more highly engaged. They allow more time and attention to the training and thereby become more skilled as a result [11].

In general, there are two types of serious games for training: broad-based mission operational training and task-specific training. Both types of games provide benefits to the training audience.

Task-based training is based on an analysis of the performance components required to complete a given task and the skills needed to execute task elements [9]. For example, a trainee may be required to know how to replace a specific component on an engine or how to take appropriate actions to control a crowd. The effects of the situation or context in which a task is to be performed may also have implications for training, as

fixing an engine in a shop versus a desert may require the mechanic to adapt and improvise, and controlling a friendly crowd of children versus an angry crowd of protesters may require the security officer to employ different techniques.

In contrast, mission-based training is directed more toward achieving a complex developmental goal that will usually involve implementing several tasks simultaneously and may not have a specific predefined outcome. Mission-based training tends to focus on more attitudes, knowledge, and skills collectively rather than just the skills that are the typical focus of task-based training.

The VCAT course combines the specific benefits of task-oriented training with the complexity of mission-based objectives to provide a comprehensive course that allows users to develop well-rounded knowledge of their situational environment, as well as their mission objectives. VCAT integrates serious games to deliver high-impact training to the user. The serious games are combined with quizzes, videos, and mini-games that allow trainees to practice and be tested on what they have learned [7].

2.1 VCAT Course Components

The VCAT curriculum is designed to provide trainees with the knowledge, skills, and attitudes they will need for intercultural interactions in order to successfully conduct missions during their deployment. The course is built with significant input from subject matter experts (SMEs), including active-duty and former military personnel, domain and occupational experts, natives of the target geographical areas, native speakers of the target languages, sociocultural and linguistic anthropologists, and instructional design experts [7, 8]. This foundation helps to ensure that training goals, as well as course information and exercises, address realistic needs and scenarios that trainees may experience.

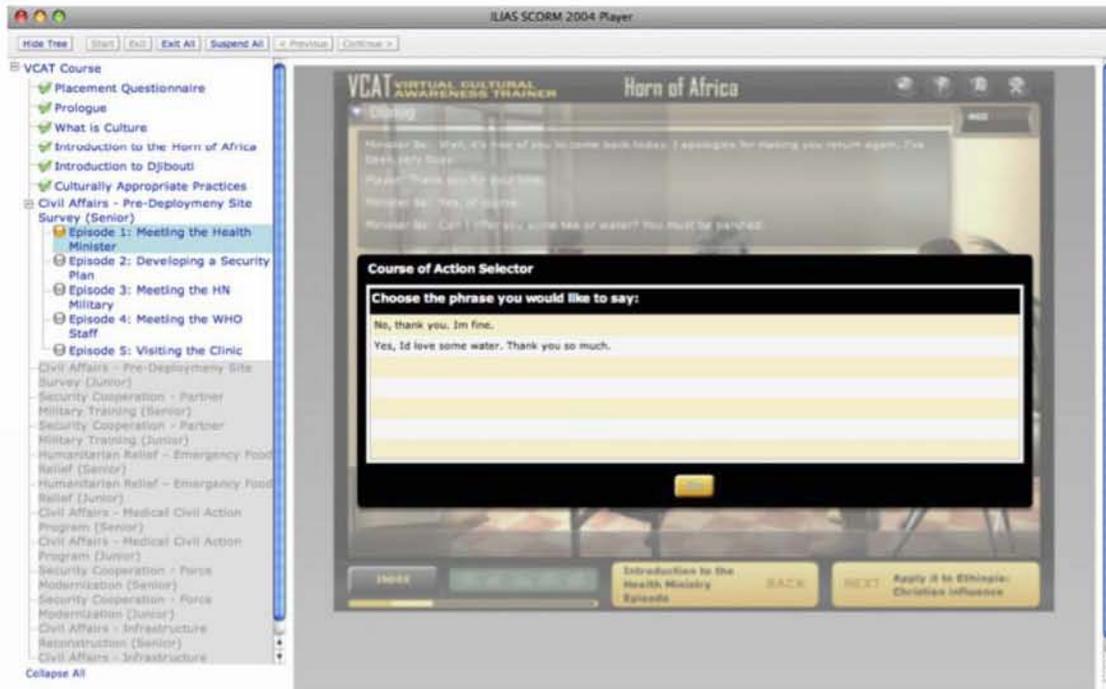
Every VCAT course begins with a Prologue that introduces trainees to the course and the region or subject focus (such as cross-cultural competence) in question. Trainees then answer a Placement Questionnaire that captures information about a trainee's background and level. This information is used to construct a customized curriculum for every learner. Below is the lesson navigator showing the customized course of instruction plus the optional materials.



The tailoring is not limited to the definition of a course of instruction. VCAT activities use a flexible multimedia instructional strategy in

which users control their experience. For example, auditory learners can choose to have the coach provide narration, while visual learners can turn it off to suit their learning style.

The core VCAT curriculum starts by having trainees learn introductory knowledge about the region in question to broaden their understanding of the social and cultural factors that are most important in the focus region. Upon completion of the regional introduction, trainees enter the core episode clusters that have been selected for them based on the Placement Questionnaire. These episode clusters are structured to reflect the trainee's area of deployment, mission assignment, and role in mission activity. VCAT provides lessons with instruction for acquiring specific operations-oriented communication skills, and then provides a combination of practice tests, formal tests, and simulated intercultural encounters in which trainees can use their newly enhanced judgment and skills to perform tasks and interact appropriately in intercultural mission-specific situations [8]. The course is built to conform to the latest SCORM standards and works on the JKO's



native AtlasPro Learning Management System (LMS).

VCAT incorporates a variety of media to help keep the trainee engaged and interested in the course materials. For example, videos and game-based scenarios are embedded into lessons where the user is presented with a dynamic culture-based situation. In this simulation, users are forced to draw upon their knowledge of local customs and behavior, as well as their ability to interact with intelligent human characters in culturally-appropriate ways.



One example of a serious game in VCAT is a mini-game, called Culture Quest. In this game, trainees have to answer questions correctly and, when they do, they are rewarded with a tile. As the game continues, the player accumulates multiple tiles that eventually can be combined into a picture puzzle. Once the picture puzzle is fully assembled, the player is surprised by a video photo montage that flashes pictures portraying cultural scenes from across the region of study. This game provides a mechanism to reinforce the new knowledge trainees have learned in their lessons and provide a new and fun way to use what they've learned.

Another serious game element in VCAT is seen in interactive scenarios that are embedded throughout the course. These scenarios present trainees with a game-based video scene in which the player has

to select a course of action. Trainees pick an action and their character in the game then role-plays the behavior associated with that choice. The non-player characters in the scenario then react to the player behavior. Following that, an interactional sequence ensues that requires the player to make additional appropriate choices in order to resolve the interaction satisfactorily according to local cultural norms and mission goals. This game-based activity enables trainees to practice applying the knowledge and skills they have acquired through the lessons in a real-time environment reflecting cultural, task, and mission factors. Key in this activity is the need for trainees to make decisions about how to proceed in response to different types of unfamiliar, desirable, or undesirable reactions from non-player characters.



The interactive scenarios embedded throughout the course are specifically designed to address the requirements of the real-world missions and AORs that trainees must negotiate. Cross-cultural factors are always at play, including attitudes that the non-player characters have toward the trainee's character. The choices available to a trainee in each scenario vary according to how well face-to-face interaction between characters proceeds and how that progress influences the non-player characters. In other words, the trainee is immersed in a responsive and adaptive environment rather than a fixed state scene, and must negotiate

through potentially ambiguous or nuanced engagements.

Interactive scenarios are available in three forms. First, mini-conversation exercises are one-move dialogs in which the learner is prompted with a verbal and gestural input from a character in the AOR and must select the appropriate response. The system provides scaffolding in the form of a "+" or "-" sign and a corresponding earcon indicating whether the character reacted positively or negatively to the learner's choice. Further, an interactive coach appears and provides both positive reinforcement as well as detailed feedback about the choice. A screenshot of a mini-conversation exercise showing positive feedback and the coach is shown below.



A second type of interactive scenario is a practice episode. A practice episode immerses the learner in a mission setting, provides a number of goals, and exposes the learner to a number of situations as the scenario unfolds. At each move, the learner gets the same type of scaffolded feedback described above, as well as the opportunity to request detailed feedback from the coach. At the end of a test scenario, VCAT uses the coach to provide the learner with a debriefing as well as a detailed after action review. Depending on the results of the after action review, VCAT also provides the learner with tailored remediation in the form of a custom set of lesson materials that address any subjects or skills the learner

has not mastered in the scenario. The learner can and should perform practice episodes several times, exploring the consequences of specific cultural choices. Below is a screenshot of a practice episode.



Mini-conversation exercises and practice episodes provide detailed training. A third type of interactive simulation called a test episode, tests the learner's ability to put these skills into practice. Test episodes are similar to practice episodes, but the learner does not get any feedback or coaching except for an indication of which mission objectives have been completed. The test episode is used for assessing the learning outcomes. A learner needs to accomplish at least 80% of the mission objectives in order to pass a test episode and that module of VCAT.

VCAT also provides language instruction by integrating Language Survival Guides from the Defense Language Institute. The system selects the Guide for the specific language relevant to the country or region selected by the learner. For example, below is a screen shot of the lesson with the survival guide for Moroccan Arabic, offered to a learner who selected Morocco as the country of deployment.



3.0 Conclusion

The Virtual Cultural Awareness Trainer breaks new ground in a number of ways. It combines the engaging and fun elements of serious games with the power of innovative instructional design and advanced technologies that result in customizable courses of instruction. It integrates varied and interesting multimedia and game-based components into lessons and provides culture- and mission-based knowledge and perspectives based on the first-hand experience of subject matter experts, many of whom have played the same real-life roles that trainees will play when deployed. VCAT thereby provides a flexible, adaptive, and fun training resource that brings serious games into the schoolhouse.

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