

# The Virtual Cultural Awareness Trainer (VCAT): Joint Knowledge Online's (JKO's) Solution to the Individual Operational Culture and Language Training Gap

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Over the years, it has become increasingly clear that in order for coalition partner Service personnel to be more effective in their missions, they require at least a basic level of intercultural competence. Unfortunately, many deploying military Service personnel do not have enough time or access to sufficient training in the most basic intercultural competence. Compressed pre-deployment training schedules do not permit immersive learning in country. Most personnel receive little or no exposure to the target culture or language prior to deployment, and must start carrying out their missions soon after arrival in theater. The VCAT series provides cultural and language training that focuses on the development of mission-relevant intercultural competence that is available to personnel when and where they need it. The presentation provides insight on JKO's solution to these issues using the VCAT and their dedication to improving on past models by adding greater integration of language in new cultural training resources.

## 1.0 INTRODUCTION

Military operations in Afghanistan, Iraq, and other countries 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 [5, 17] and has prompted numerous studies to identify needs for training and education to enhance cross-cultural and culture-specific capabilities for military personnel [1, 3, 14].

As part of the effort to address practical operational 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) [4]. VCATs are web-based courses incorporating interactive games accessible via Joint Knowledge Online (JKO). Individual Service personnel use VCAT courses to acquire basic

*operational intercultural competence: knowledge, skills and attitudes (KSAs) relevant to intercultural communication in operational settings.*

JKO has been dedicated to continually improving on the VCAT training model to increase its operational relevance and effectiveness. It has developed a series of VCAT courses and in each instance has improved both the instructional focus and the delivery methods. For example, the current VCAT model includes language skills, as well as cultural knowledge and intercultural competence skills, which trainees can apply in operationally oriented scenarios.

This paper describes the current VCAT training model. It outlines the instructional design and research methods used to create VCAT courses, and the innovative integration of interactive multimedia and game-based learning that is used to realize them. The resulting courses motivate trainees, help them rapidly acquire relevant knowledge, skills, and attitudes, and retain them so that they can employ them in theater. They accomplish this within the context of highly

compressed pre-deployment training schedules.

## 2.0 THE VCAT TRAINING MODEL

Four VCAT courses have been developed to date, or are currently under development. The first VCAT course, VCAT HOA, was designed for deployments to thirteen countries in the Horn of Africa region. This was followed by VCAT Northern Africa, aimed at countries in Northern Africa, from Mauritania and Western Sahara to Egypt. A VCAT course for Afghanistan is nearing completion and the first course modules are already available on JKO. A fourth course focused on South America will be available later in 2011.

Each course is designed to help trainees acquire a combination of knowledge, skills, and attitudes (KSAs) that they are likely to require for their missions. The KSAs are interlinked and strongly oriented toward application in a mission context. Trainees learn intercultural communication skills and cultural knowledge, and then practice applying that knowledge and skill in simulated mission scenarios, in which they practice and refine the skills, and develop attitudes necessary to apply their cultural knowledge in situations that they are likely to encounter as they conduct their missions.

Figures 1 and 2 illustrate the connection between knowledge-oriented and skill-oriented learning activities. Figure 1 shows a knowledge-oriented activity, taken from a lesson on working with interpreters. The activity presents some of the key points to keep in mind when working with interpreters, using text, narration, and illustrative photographs. Trainees are encouraged to review and study the material until they have a good understanding of the key points. Figure 2 shows a role-playing scenario, in which the trainee gets to apply what he or she has learned. The trainee's avatar (on the left) engages in a meeting with a village elder (on the right), assisted by an interpreter (center). The trainee must decide what his avatar should do or say from moment to moment in the context of

the scenario, thereby applying cultural knowledge and gaining intercultural skill.

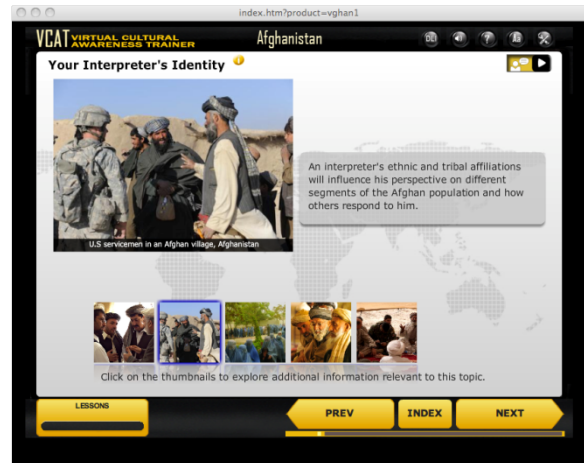


Figure 1. A knowledge-oriented learning activity



Figure 2. A skill-oriented role-playing scenario

This integrated design has multiple advantages. The operational orientation helps trainees to understand why intercultural competence is important and relevant, and helps to motivate and engage them. Putting the training in the context of simulated realistic situations aids in retention, as well as transfer to the operational environment.

While the cultural training community recognizes the need for training that is culture-specific, focused on the area of responsibility (AOR), and culture-general, addressing skills that Service personnel can apply in any context [1, 3, 13], actual training programs tend to address these domains separately. We take the position

that this separation is artificial and that culture-general and culture-specific KSAs are intertwined in social life and that this should be reflected realistically in Service personnel operational training resources. Cultural KSAs are organized and presented using a culture-general framework that helps trainees understand, structure, and apply culture in relation to operations. Many of the skills that VCAT courses teach, such as perspective-taking and developing rapport and common ground, are really culture-general skills that trainees can apply in a wide range of operational contexts. However, illustrating these skills in the context of mission scenarios in the AOR makes them more concrete and understandable, as well as directly applicable to a trainee's circumstances.

Another common debate in the operational culture training community is how much language training should be included in pre-deployment training [2]. Experience of Service personnel deployed in the field indicates that even basic language skills can contribute to mission success, and evaluation studies confirm this. For example, a study by the Marine Corps Center for Lessons Learned [12] showed that pre-deployment training by the 3/7 Marine Battalion with the Tactical Iraqi course helped the battalion communicate and operate in Iraq. Therefore, starting with VCAT Afghanistan, JKDDC received guidance to incorporate mission-oriented language training into the VCAT training model. This includes introductory language learning materials from the Defense Language Institute, as well as focused learning materials designed to help learners to acquire mission-oriented communication skills.

One challenge in making VCAT training mission-focused is that there is considerable variability in the missions, mission responsibilities, and areas of responsibility of VCAT trainees. Regional VCAT courses cover a number of different countries, each of which has a mix of cultures, sub-cultures, and ethnic groups. There can be significant cultural

differences from region to region within the same country, particularly in a multiethnic country such as Afghanistan. The intercultural skills needed for a mission such as checkpoint manning are very different from those needed for coordinating with host-nation officials on humanitarian assistance projects. Individual trainees also vary considerably in the amount of time they wish to devote to training. Some have only a few hours to train, while others wish to spend more time so they can extend or deepen their knowledge and skills.

To accommodate this variability in training needs and requirements, VCAT courses do not have a single fixed curriculum, but are designed to support a variety of focused courses of instruction, each tailored to the needs of the individual trainee. The course contains a collection of learning modules, some of which are generally relevant and some of which are mission-specific. Trainees starting the course complete a placement questionnaire in which they indicate their particular area of responsibility, mission focus, and level of seniority. The VCAT course delivery system then automatically selects a subset of required modules that is coherent and well-structured, and which is focused on the trainee's individual learning objectives. Trainees who have additional training time are free to branch out and study additional course modules outside of their required subset.

Another consequence of the mission-oriented focus of VCAT courses is the need for timely, accurate, and relevant cultural information. It can be difficult to find published cultural resources that address the specific cultural factors relevant to particular missions. Moreover, regions of current interest such as Afghanistan and Northern Africa are undergoing rapid political and social change, so cultural information quickly becomes out of date. We therefore conduct anthropological and linguistic research in support of every VCAT course, to ensure the accuracy and appropriateness of all materials. Sociocultural and linguistic anthropologists

employ ethnographic interviews and other best-practice data collection methods in this work [8, 9]. Active-duty and former military personnel, domain and occupational experts, natives of the target geographical areas, and native speakers of the target languages all participate in this process. This helps to ensure that the courses accurately reflect both the macrosocial and microsocial culture of the current operating environments covered by the course.

### **3.0 VCAT AND SERIOUS GAMES**

VCAT course designs draw heavily on the design principles of 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.” 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 [7, 16] 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 combined 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 and allow more time and attention to the training, thereby becoming more skilled [15].

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 [11]. 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 attitudes, knowledge, and skills collectively rather than just the skills that are the typical focus of task-based training.

The VCAT courses combine 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 scenario-based serious games, as shown in Figure 2, to deliver high-impact training to the user. Other mini-games reinforce cultural knowledge and add variability to the trainee experience, to maintain their interest and engagement over extended periods of time.

Figure 3 shows one such mini-game called Culture Quest, which tests trainees recall of cultural knowledge. 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.



Figure 3. Example cultural knowledge mini-game

The serious game perspective influences the design of all activities in VCAT courses, not just the game activities per se. It leads us to consider the affective and motivational states of the trainees, not just their knowledge and cognitive states. For example, videos of first-person accounts by Service personnel of their cultural experiences during deployment can help trainees to relate directly and more personally to the material being presented and understand its relevance.

One aspect of the VCAT course design where affective and motivational dimensions play a particular prominent and pervasive role is in the Virtual Coach. The Virtual Coach accompanies the trainee throughout the course, introduces each topic, and provides feedback on the trainee's performance. Building on research on the Politeness Effect in pedagogical agents [10], the interaction tactics of the Virtual Coach are designed with the affective state of the learner in mind, and are designed to help orient and support the learner, and avoid face-threatening feedback that could discourage the learner. The manner in which the Virtual Coach engages the learner depends upon the intended flow state of the learning activity [6]. If the learner is engaged in a highly interactive game scenario, the Virtual Coach provides

feedback only upon user request, so as not to disrupt the flow of the interaction. If the learner is engaged in a more reflective activity, such as preparing for a scenario or reviewing performance at the end of a scenario, then the Virtual Coach provides more detailed feedback, typically combining cognitive and affective elements.



Figure 4. Example Virtual Coach feedback

#### 4.0 ADVANCED TECHNOLOGY FEATURES

VCAT courses incorporate some unique and innovative interactive technologies, to maximize the interactivity of the training experience and optimize its potential for promoting skill acquisition. One place where these technologies are employed is in the interactive role-playing scenarios. These scenarios present a scene in which the trainee has to select a course of action for his or her avatar. The avatar performs a behavior associated with that choice, and the non-player characters in the scenario then react to the avatar's behavior. 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.



Figure 5. A speech-enabled role-playing scenario

Another innovative technology that is being integrated into VCAT courses is speech technology, or more precisely learner speech recognition technology. The latest VCAT courses incorporate automated speech recognizers that are trained on the speech of language learners, as opposed to native speakers. This makes the speech processing system highly tolerant of accented learner speech, and able to detect common learner language errors. This capability is based upon earlier speech for PC-based serious games [9], but packaged as a Web browser plug-in. This new capability enables trainees to apply their spoken language skills in role-playing scenarios,

as shown in Figures 5 and 6. In Figure 5 the trainee chooses to speak for his or her avatar (center) by clicking on the ASR button (top right). This brings up a panel of courses of action as shown in Figure 6, as well as possible things to say to carry out each course of action, in this case in Pashto. The trainee speaks a Pashto phrase, and then the non-player characters respond to the trainee's avatar based upon what the trainee said.



Figure 6. Spoken language input

## 5.0 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 needed intercultural competence to Service personnel deploying overseas.

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