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Abstract

The Canadian Armed Forces (CAF) is adopting a comprehensive approach to operations, which is based upon effective joint, interagency, multinational, public (JIMP) collaboration within an increasingly complex security environment (Leslie, Gizewski, & Rostek, 2008). From the military's perspective, one relatively new aspect of the comprehensive approach is an increased and explicit focus on collaboration with members of the local population in theatre. The development of cultural knowledge which enables interaction with the local population is fast becoming a focus of military research. Defence Research and Development Canada, Toronto Research Centre (DRDC Toronto) was asked by the Directorate of Civil-Military Cooperation (DCIMIC) to conduct a preliminary evaluation of a software program entitled "Operational Language and Culture Training System" (OLCTS), created by Alelo, Inc. This software is currently in use in a number of Canada's allies (e.g., the United States, Australia, and the United Kingdom) and focuses on acquiring language skills and cultural knowledge relevant to working among local populations in overseas missions. Performance data were collected through two means: (1) in-game user progress data, including time on task, quiz scores, and speech attempts; and (2) surveys, including descriptive statistics, perceived skill level of comprehension, perceived speaking skill level, cultural interaction skills, software contributions to skills acquisition, and open-ended comments. Study results underscore the continued need for systematic evaluations of training and for tailoring training to the needs of mission tasks.

Résumé

Les Forces armées canadiennes (FAC) adoptent une approche exhaustive à l'égard des opérations qui est fondée sur une collaboration efficace en contexte interarmées, interorganisationnel, multinational et public (IIMP) dans le cadre d'un environnement de sécurité de plus en plus complexe (Leslie, Gizewski, & Rostek, 2008). Du point de vue militaire, l'un des aspects relativement nouveaux de l'approche exhaustive est un accent accru et marqué sur la collaboration avec la population locale dans le théâtre des opérations. L'acquisition de connaissances culturelles permettant d'interagir avec la population locale devient rapidement un objectif de la recherche militaire. Le Directeur – Coopération civilomilitaire (DCOCIM) a demandé au Centre de recherche de Toronto de Recherche et développement pour la défense Canada (RDDC Toronto) d'effectuer une évaluation préliminaire du logiciel « Operational Language and Culture Training System » (système de formation sur la langue et la culture opérationnelles) (OLCTS) conçu par l'entreprise Alelo. De nombreux alliés du Canada (p. ex., États-Unis, Australie, Royaume-Uni) utilisent actuellement ce logiciel axé sur l'acquisition de compétences linguistiques et de connaissances culturelles pertinentes permettant de collaborer avec les populations locales lors de missions à l'étranger. Des données sur le rendement ont été recueillies de deux façons : (1) données sur les progrès de l'utilisateur dans le monde virtuel, y compris le temps consacré aux tâches, les résultats de test et les tentatives de discours; (2) sondages, y compris des statistiques descriptives, le niveau présumé de compétence en compréhension, le niveau présumé de compétence linguistique, des compétences en relations culturelles, des contributions au logiciel pour l'acquisition de compétences et des commentaires ouverts. Les résultats de l'étude mettent en évidence le besoin continu d'évaluations systématiques de l'instruction et de son adaptation selon les exigences liées aux tâches de mission.

Executive summary

Evaluation of Alelo's Operational Language and Culture Training System for Use by the Canadian Forces:

[Tara L. Holton, Kelly Piasentin, Emily-Ana Filardo, Megan Thompson, Angela R. Febbraro]

Introduction or background: The Canadian Armed Forces (CAF) has been adopting a comprehensive approach to operations, which is predicated upon effective joint, interagency, multinational, and public (JIMP) collaboration. This capacity has been cited by the Director of Land Concepts and Designs (DLCD)[1] as an important enabler of future CAF operations and a key means to ensuring mission success in an increasingly complex security environment (Leslie, Gizewski, & Rostek, 2008). From the military's perspective, one relatively new aspect of the comprehensive approach is an increased and explicit focus on collaboration with members of the local population in theatre. Indeed, the indigenous population is increasingly considered to be the true centre of gravity in these missions, and links with indigenous local populations are seen as key toward facilitating coordination and trust. In addition, building and maintaining this support means that the local population can assist in alerting military forces to potential threats (van der Kloet, 2006). Given the expectation that future missions will continue to require effective liaison and communication between militaries and local populations from diverse cultural backgrounds, there is a need to better prepare deploying CAF personnel with respect to their interactions with the indigenous population. Increasingly, computer software designed to teach language skills and cultural knowledge is being tested and/or is currently in use as a training component by several of Canada's allies, including the United States (US), the United Kingdom (UK), and Australia. Defence Research and Development Canada, Toronto Research Centre (DRDC Toronto) was asked by the Directorate of Civil-Military Cooperation (DCIMIC) to evaluate one such software program known as the *Operational Language and Culture Training System* (OLCTS).[2] Created by Alelo-TLT LCC (a subsidiary of the California-based company Alelo, Inc.), the proposed aim of the OLCTS software is to prepare military personnel for missions by training them in the language and culture of the region to which they will be deployed. For the purposes of the present study, upon request by DCIMIC, DRDC Toronto acquired multiple free copies of the personal computer version of Operational Pashto and Dari from Alelo, Inc. for evaluation purposes.

Results: Feedback provided by participants who had previously deployed to Afghanistan suggests that current pre-deployment culture and language training offered to CAF personnel is well regarded but insufficient. Some participants indicated that they had not received language and culture training prior to deploying to Afghanistan. Of those who had received some training, only 25% believed that the language training they had received was sufficient. With respect to the OLCTS, average performance across participants based on quiz scores was good, averaging 79%. Quiz scores remained relatively stable across the modules/chapters, which might indicate that participants were engaged and able to retain the knowledge taught in each module/chapter. However, the current software allows quizzes to be taken repeatedly and test scores to be

[1] DLCD is now known as the Canadian Army Warfare Centre (CALWC).
[2] The OLCTS was previously called the *Tactical Language and Culture Training System*. The name change occurred during the course of this study.

overwritten, which was problematic from the perspective of collecting validity data. In general, participants suggested that the software is of good quality and a welcome potential addition to training already provided in the CAF. Qualitative feedback provided by participants through their responses to open-ended questions suggested a number of positive features of the training tool. For instance, some participants commented that the quality of the video and graphics were good and that they enjoyed the individually-paced and interactive nature of the software.

Significance: Results underscore the continued need for systematic evaluations of training tools and for tailoring training to the needs of mission tasks.

Future plans: Future research directions to advance the development of knowledge surrounding this relatively new approach to training language and culture could include

- determining the validity of the software's claims by following up on training during deployment,
- exploring the practical feasibility of software use in theatre,
- exploring the impact of cultural training on perceptions of confidence in abilities, and
- assessing language capabilities both pre- and post-training with the software as a means of determining improvement in language capabilities resulting from software use.

Sommaire

Evaluation of Alelo's Operational Language and Culture Training System for Use by the Canadian Forces:

[Tara L. Holton, Kelly Piasentin, Emily-Ana Filardo, Megan Thompson, Angela R. Febbraro]; DRDC Toronto TM 2012-117; R & D pour la défense Canada – Toronto; décembre 2012.

Introduction ou contexte : Les Forces armées canadiennes (FAC) ont adopté une approche exhaustive à l'égard des opérations qui est fondée sur une collaboration efficace en contexte interarmées, interorganisationnel, multinational et public (IIMP). Le Directeur – Concepts et schémas de la Force terrestre (DCSFT)[3] a cité cette capacité comme étant un élément important des futures opérations des FAC et une méthode essentielle pour assurer la réussite des missions dans un environnement où la sécurité est de plus en plus complexe (Leslie, Gizewski, & Rostek, 2008). Du point de vue militaire, l'un des aspects relativement nouveaux de l'approche exhaustive est un accent accru et marqué sur la collaboration avec la population locale dans le théâtre des opérations. En effet, la population indigène est de plus en plus considérée comme le véritable centre de gravité de ces missions et les relations avec celle-ci facilitent la coordination et la confiance. En outre, l'obtention et le maintien de cet appui permettent à la population locale d'aider les forces militaires en les informant des menaces potentielles (van der Kloet, 2006). Le personnel déployé des FAC doit être mieux préparé à interagir avec la population indigène puisqu'au cours des prochaines missions, ils auront sans doute à établir de nouvelles relations et communications efficaces avec les populations locales de milieux culturels diversifiés. Des logiciels axés sur l'acquisition de compétences linguistiques et de connaissances culturelles sont de plus en plus évalués ou utilisés par de nombreux alliés du Canada (p. ex., États-Unis, Australie, Royaume-Uni) dans leur volet de formation. Le Directeur – Coopération civilomilitaire (DCOCIM) a demandé au Centre de recherche de Toronto de Recherche et développement pour la défense Canada (RDDC Toronto) d'effectuer une évaluation du logiciel « Operational Language and Culture Training System » (système de formation sur la langue et la culture opérationnelles) (OLCTS)[4]. Conçu par l'entreprise Alelo TLT LLC (une filiale de la compagnie californienne Alelo Inc.), ce logiciel a pour but de préparer les militaires à des missions en leur enseignant la langue et la culture de la région où ils seront affectés. Dans le cadre de la présente étude, à la demande du DCOCIM, RDDC Toronto a obtenu gratuitement de nombreuses copies du logiciel personnel des langues pachto et dari aux fins d'opérations d'Alelo pour évaluation.

Résultats : Les commentaires des participants ayant déjà été affectés en Afghanistan indiquent que la formation linguistique et culturelle actuellement offerte au personnel des FAC avant un déploiement est bien appréciée, mais insuffisante. Certains participants ont mentionné ne pas avoir reçu cette formation avant leur affectation en Afghanistan. Parmi ceux ayant reçu de la formation, seulement 25 pour cent d'entre eux juge leur formation linguistique suffisante. En ce qui concerne le OLCTS, le rendement moyen des participants selon les notes du test était de 79 pour cent, ce qui est bien. Les résultats relativement stables dans l'ensemble des modules et

[3] Le DCSFT est maintenant appelé le Centre de guerre terrestre de l'Armée canadienne (CGTAC).
[4] Le OLCTS était auparavant le « Tactical Language and Culture Training System » (système de formation linguistique et culturelle tactique). Ce changement de nom a eu lieu au cours de cette étude.

des chapitres peuvent indiquer que les participants étaient mobilisés et capables de retenir les connaissances acquises dans chacun d'eux. Toutefois, le logiciel actuel permet de refaire les tests à plusieurs reprises et de remplacer les résultats, causant ainsi certains problèmes pour l'obtention de données sur la validité. En général, les participants ont affirmé que le logiciel est de bonne qualité et que son ajout potentiel à la formation actuelle des FAC serait apprécié. La rétroaction qualitative fournie par les participants avec leurs réponses à des questions ouvertes indiquait un certain nombre de caractéristiques positives de l'outil de formation. Par exemple, certains participants ont souligné que la qualité des vidéos et des graphiques était bien et qu'ils avaient aimé le logiciel de nature interactive adapté au rythme des individus.

Importance : Les résultats de l'étude mettent en évidence le besoin continu d'évaluations systématiques de l'instruction et de son adaptation selon les exigences liées aux tâches de mission.

Perspectives : L'orientation des prochaines recherches pour accroître l'acquisition de connaissances concernant cette méthode de formation linguistique et culturelle relativement nouvelle devrait inclure les aspects suivants :

- Déterminer la validité des allégations concernant le logiciel en faisant le suivi de la formation durant le déploiement;
- Examiner la faisabilité pratique d'utiliser le logiciel dans le théâtre;
- Examiner l'incidence de la formation culturelle sur la confiance en ses capacités;
- Évaluer les connaissances linguistiques avant et après la formation à l'aide du logiciel afin de déterminer l'amélioration liée à son utilisation.

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1 Introduction

The Canadian Armed Forces (CAF) has been adopting a comprehensive approach to operations, which is predicated upon effective joint, interagency, multinational, and public (JIMP) collaboration. This capacity has been cited by the Director of Land Concepts and Designs (DLCD, now known as CALWC) as an important enabler of future CAF operations and a key means to ensuring mission success in an increasingly complex security environment (e,g., Leslie, Gizewski, & Rostek, 2008).

From the military's perspective, one relatively new aspect of the comprehensive approach is an increased and explicit focus on collaboration with members of the local population in theatre. Indeed, the indigenous population is increasingly considered to be the true centre of gravity in these missions, and links with local populations are seen as key toward facilitating coordination and trust. In addition, building and maintaining this support means that the local population can assist in alerting military forces to potential threats (van der Kloet, 2006). Given the expectation that future missions will continue to require effective liaison and communication between militaries and local populations from diverse cultural backgrounds, there is a need to better prepare deploying CAF personnel with respect to their interactions with the indigenous population. The Applied Research Project (ARP) *JIMP Essentials in the Public Domain: Implications for the Tactical Commander* (12og) was developed, in part, to address this requirement.

1.1 Culture and Language Training

Cultural and language competencies are integral to forming effective working relationships within a comprehensive approach. Comprehension of relevant culture and language is necessary for meeting the challenges posed by the changing nature of international conflict, a fact widely acknowledged in recent years in Canada and elsewhere (e.g., see CFLI Project Team, 2008; Ross, 2008; Thomas, 2009; UK Ministry of Defence, 2009). Cultural differences may influence each of the JIMP components, and understanding why and how diverse cultures behave and think can promote effective operations by demonstrating respect, fostering trust and collaboration, and reducing risk. As noted in a Joint Doctrine Note produced by the UK Ministry of Defence (2009),

> [e]nhancing cultural capability contributes to the success of operations through risk reduction and the exploitation of opportunities, including the potential to influence behaviours and perceptions. It improves the ability to calculate and plan military outcomes, and leads to better informed strategic, operational and tactical decision making by commanders and individuals of all ranks. Cultural capability can also enhance routine relations with friendly and neutral actors, including allies and partners. (p. v)

Although the need for cultural competence is increasingly emphasized within military circles, there is a great deal of uncertainty with regard to what exactly cultural competence is and how it may be attained (CFLI Project Team, 2008). Within the growing literature on the importance of culture to the military, it is often acknowledged that the level of cultural knowledge required for today's complex mission environment is vastly different from the level required in the mission environments of the past. Definitions of what this more sophisticated level of cultural knowledge encompasses vary within the literature. Often, the name varies as well, with examples including "cultural competence," "cultural capability," "cross-cultural competence," "intercultural

competence," and "cultural intelligence." In general, however, military research emphasizes the need for a level of cultural competence that represents a more complex understanding of culture and language than was typical in the past. For example, cross-cultural competence is defined by the Defense Equal Opportunity Management Institute Directorate of Research as follows:

> Cross-cultural competence is the development of knowledge and skill through experience and training that results in a complex schema of cultural differences, perspective-taking skills, and interpersonal skills, all of which an individual can flexibly (or adaptively) apply through the willingness to engage in new environments even in the face of considerable ambiguity, through self-monitoring and through self-regulation to support mission success in a dynamic context. (Ross, 2008, p. 3)

The Canadian Forces Leadership Institute (CFLI) defines cultural intelligence in the following terms:

> Cultural Intelligence or CQ (analogous to Intelligence Quotient or IQ) is the capacity of an individual to recognize and respond to the components of culture discussed above [i.e., identity; core, intermediate, and peripheral beliefs; values; attitudes and perceptions; belief systems; cultural forms/narratives; language]. It is a capacity possessed, in differing degrees, by individuals. Therefore, it includes, but is not limited to, knowledge of facts about the culture in question. CQ is a multi-dimensional capacity that includes various competencies or personality attributes that can be developed in an individual, to a certain extent and certain skill sets that can be learned or acquired. (CFLI Project Team, 2008, pp. 36–37)

As these definitions suggest, although innate abilities are implied, one of the commonalities in the literature is reference to the notion that it is possible to teach, develop, and acquire the in-depth level of cultural competence required for mission success in today's complex environments. Not surprisingly, how to achieve this level of capability is fast becoming a focus of military research. Many militaries are trying to respond to this emergent training need as rapidly and as effectively as possible. Although one emphasis is on systemic, long-term approaches to developing a culturally competent, culturally intelligent military (as discussed above), there is also a focus on the development of practical tools that aid in addressing the immediate needs faced by today's military personnel. Training tools that focus on these immediate needs understandably lend themselves primarily to knowledge acquisition and specific skill development rather than the development of a holistic cultural competency. This form of cultural knowledge/skill is often referred to as "cultural awareness." If the development of cultural competence is viewed on a continuum, cultural awareness would represent the beginning of the continuum. Tools that impart cultural awareness may be understood as a component of the process of acquiring knowledge and developing cultural capabilities, but not the entire solution.

There are a range of approaches that have traditionally been used by militaries for cultural awareness training. Lectures by cultural subject-matter experts (SMEs) and by expatriates are often the training tool of choice. Increasingly, however, computer software designed to teach language skills and cultural knowledge is becoming common and is currently being tested and/or is currently in use as a training component by several of Canada's allies, including the United States (US), the UK, and Australia. Defence Research and Development Canada, Toronto Research Centre (DRDC Toronto) was asked by the Directorate of Civil-Military Cooperation (DCIMIC) to evaluate one such software program, known as the Operational Language and Culture Training System (OLCTS).[5] Created by Alelo-TLT LCC (a subsidiary of the California-

[5] The OLCTS was previously called the Tactical Language and Culture Training System. The name change occurred during the course of this study.

based company, Alelo, Inc.), the proposed aim of the OLCTS software is to prepare military personnel for missions by training them in the language and culture of the region to which they will be deployed. Examples of military training missions covered by the software include civil affairs and reconstruction, house cordon and search, entry and vehicle checkpoint, crowd management, information gathering, partner forces team training, and embassy security. The courses provided through the software are available for use on a personal computer, in web-based programs, through localized courses and mission-rehearsal applications, and as companion materials for the Apple iPhone, iPod, and iPad.[6] For the purposes of the present study, upon request by DCIMIC, DRDC Toronto acquired multiple free copies of the personal computer version of Operational Pashto and Dari from Alelo, Inc., for evaluation purposes.

1.2 Past Evaluations

A handful of evaluations have been performed on Alelo's Language and Culture Training software. Some evaluations have been conducted by Alelo, while other independent evaluations of varying rigour have been conducted by the US military, the CAF (see below), and the Australian Defence Force. The focus and methodologies used in these previous evaluations have been diverse, as the evaluations were tailored to the needs of the militaries involved. For instance, a small-scale study conducted by the Canadian Forces Language School (CFLS) focused on the linguistic and pedagogical aspects of the software and on the applicability of the content of the Culture and Language Training Software to regions where the CAF is deployed (CFLS, 2007). Survey findings of two Afghan native speakers and four students indicated that the interactions and dialogues were appropriate to the operational missions of the CAF in Afghanistan. Although the evaluators acknowledged the limitations of such a small study, they concluded that the cultural content of the mission game[7] in particular could be of benefit to both the short-term and long-term user. Moreover, they believed that some of the "game" aspects of the software may "have a positive effect on learners' motivation and will ease comprehension and retention of vocabulary" (CFLS, 2007, p. 13).

A larger-scale, outcome-based evaluation of the Tactical Iraqi software program conducted by the US Special Operations Command (Surface, Dierdorff, & Watson, 2007) found that trainees demonstrated statistically significant increases in both Iraqi Arabic language and cultural knowledge as a result of the training; the majority received an Interagency Language Roundtable scale rating of 0+ after 40 hours of training.[8] In addition, a US Marine Corps survey evaluation of the Tactical Iraqi version of the software (Marine Corps Centre for Lessons Learned, 2008) found that participants demonstrated an improved ability to communicate and operate in Iraq. Further, an anecdotal evaluation derived from communication with an individual involved in training the Australian Special Forces in Languages Other Than English (LOTE) suggests that their experience with Alelo's system has been positive as well. Both instructors and students noted "great satisfaction with the programme, and the benefits appear to be reflected in the students'

[6] See http://www.alelo.com/language_culture.html

[7] The mission game, to be described in more detail later, teaches participants how to interact with Afghanis in a videogame that simulates real-life tasks and missions.

[8] A 0+ rating entails "survival proficiency" in terms of

- speaking (e.g., able to satisfy immediate needs such as for lodging, meals, and transportation using memorized or rehearsed speech only; no fluency),
- listening (e.g., able to understand short phrases based on memorized material; slightly longer phrases must be repeated and include frequent pauses to be understood), and
- reading (e.g., able to understand some isolated words and phrases such as personal and place names and street or store signs but not connected prose).

abilities to absorb the LOTE in a relatively short time (12 wks), albeit at 1+[9] levels" (I. Lewis, personal communication, February 22, 2010).

1.3 Purpose of Study

The present study represents a preliminary evaluation of the OLCTS (Pashto and Dari languages[10]). As noted earlier, although some evaluations have been conducted on the Alelo software, none have focused on the applicability of this software to the specific needs of CAF personnel whose roles require them to have extended exposure to indigenous or local populations.[11]

In the present evaluation, we focus on the specific needs of the CAF by assessing cultural knowledge and language acquisition in CAF participants in this study, obtained using the built-in performance metric capabilities contained within the Alelo software; and by assessing participants' evaluations of their skill acquisition and the utility of the software, obtained through pre-training, interim, and post-training surveys. Although performance indicators are an important source of data concerning the utility of this software, it is of note that assessments such as trainee evaluations of utility or effectiveness of training also have significant merit as these have been linked to improved training transfer to the job environment. Similarly, satisfaction with training has also been associated with training outcomes (Surface et al., 2007).

In addition, this study seeks to compare the evaluative ratings and performance measures of experienced individuals (those who have returned from deployment to Afghanistan) to those of novice CIMIC personnel (those who have never deployed to Afghanistan), using a reverse (backward) transfer-of-training paradigm (Goettl & Shute, 1996; Martin, 1981). That is, participants who have already deployed to Afghanistan should perform better in the simulated environment, at least initially, due to their experience in the field than those who have not yet had field experience . The latter (novice) group is expected to perform relatively poorly at the beginning of training but is predicted to improve over time. Thus, if the software provides an effective learning experience, then the performance of soldiers who have not had experience in Afghanistan should over time approach the level of soldiers with prior experience in Afghanistan.

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[9] A 1+ rating entails "elementary proficiency" in terms of fulfilling travel needs, posing questions and providing answers for simple topics, understanding basic speech, and communicating basic needs.

[10] The study started with the Pashto language software as this was most relevant to the Canadian Area of Responsibility at the time during Operations ATHENA and ARCHER. Once Operation ACCIUS commenced, the Dari language software became more appropriate given the new Canadian Area of Responsibility.

[11] Although the importance of interacting with others is important for all CAF personnel within a comprehensive approach to operations, it is perhaps best personified in the work of Civil-Military Cooperation (CIMIC) personnel. According to North Atlantic Treaty Organization (NATO) CIMIC doctrine (NATO Allied Joint Publication 9), the central functions of CIMIC are

- Support to the Force. Any activity designed to create support for the military force from within the indigenous population.
- Civil-Military Liaison. Coordination and joint planning with civilian agencies in support of the mission.
- Support to the Civil Environment. The provision of any of a variety of forms of assistance (expertise, information, security, infrastructure, capacity-building, etc.) to the local population in support of the military mission. (NATO/EAPC, 2003, pp. 1-3 to 1-4)

2 Methodology

2.1 Participants

Participants in this study were 25 members of the CAF (24 males and 1 female) who were posted at either the Land Force Doctrine and Training System (LFDTS), Canadian Forces Base (CFB) Kingston, Ontario (n = 10) or at CFB Gagetown, New Brunswick (n = 15).[12] All participants were volunteers who were recruited through contacts at DCIMIC or through DRDC Toronto's military liaison officer Lieutenant Colonel Dwayne Hobbs. As mentioned earlier, DCIMIC requested the evaluation of this software for use by CIMIC officers. Hence, the first set of participants were CIMIC officers from LFDTS in Kingston, all of whom were likely to have a great deal of interaction with the local population due to their role in operations. The second set of participants from CFB Gagetown were preparing for deployment to Afghanistan and, upon hearing about the study from Lieutenant Colonel Hobbs, requested participation in the study as a means of preparing for interaction with the local population.

Prior to participating in the study, all individuals were assured that (a) their participation would be completely voluntary and that they could end their participation at any time, (b) their individual responses would remain confidential (i.e., only accessible to the research team), and (c) only aggregate, group-level data would be presented (i.e., individual responses would not be reported). See Annex A for the participant information sheet and Annex B for the voluntary consent form for this study.

All participants were members of the Canadian Army, either as part of the Reserves (n = 10) or Regular force (n = 15). Years of military service ranged from 2 to 31 years (M = 12.98; SD = 9.05). Eleven participants were commissioned officers while the other 14 participants were non-commissioned members (NCMs).

Participants ranged in age from 22 to 48 years old, with an average age of 32.84 (SD = 8.17). The majority of participants self-identified as being "White" (n = 23) and indicated that English was their first language (n = 24). Educational background varied across participants. While more than half of the participants had received a university degree (n = 14), other respondents indicated having some high school (n = 1), a high school diploma (n = 5), some college (n = 1), a college diploma/certificate (n = 3), or some university (n = 1) as their highest level of education.

2.1.1 Demographic Comparison of Kingston and Gagetown Participants

It is important to note that participants who completed the study in Kingston were categorically distinct from participants who completed the study in Gagetown. As Table 1 shows, Gagetown participants were primarily Regular force officers, and all indicated that they would be deploying to Afghanistan on the next rotation. On the other hand, Kingston participants were primarily Reserve NCMs who were taking part in the assessment of this language and culture training software during continuing education courses at CFB Kingston. As well, participants from Kingston were, on average, older and had more years of military experience than participants from Gagetown. Kingston participants were also more likely than Gagetown participants to have previously deployed to Afghanistan (80% versus 40%). Of the eight Kingston participants who had previously deployed to Afghanistan, two indicated having had no interaction with the Afghan population, whereas the remaining six participants spent an average of 25 hours per week

[12] More than 25 participants initially volunteered to participate in the study; however, due to incomplete data and/or a technical glitch that rendered some participant data unusable, the sample size is limited to 25 participants.

interacting with the Afghan population (*SD* = 23.80). Of the six Gagetown participants who had previously deployed to Afghanistan, one had no interaction with the Afghan population; the remaining five participants spent an average of 22 hours per week interacting with the Afghan population (*SD* = 26.57).

Table 1: Demographic Characteristics of Kingston and Gagetown Participants

	Kingston (*n* = 10)	**Gagetown (*n* = 15)**
Age	*M* = 36.00 *SD* = 9.17	*M* = 30.73 *SD* = 6.97
Years of Military Service	*M* = 17.05 *SD* = 9.39	*M* = 10.27 *SD* = 8.01
Rank	Commissioned Officer: 1 NCM: 9	Commissioned Officer: 10 NCM: 5
Force	Reserve: 9 Regular: 1	Reserve: 1 Regular: 14
Previously deployed to Afghanistan?	Yes: 8 No: 2	Yes: 6 No: 9
Deploying on next rotation to Afghanistan?	Yes: 0 No: 10	Yes: 15 No: 0

Finally, participants received training in the Afghan language that was predominant in the Canadian Area of Responsibility in Afghanistan when the study was run. That is, the Kingston sample was run when Canada was in a predominantly Pashto speaking area of responsibility (Kandahar) and received Operational Pashto Language and Culture Training (OPLCT). The Gagetown sample received the Operational Dari Language and Culture Training (ODLCT) package as the Canadian mission had changed to focus on training/advisory roles and had relocated to Kabul where Dari is the predominant Afghan language spoken.

2.2 Materials

2.2.1 Alelo Software

The OLCTS software consists primarily of Skill Builder and Mission Game modules.[13]

> The *Skill Builder* teaches vocabulary, pronunciation, grammar and culture using exercises and quizzes that involve listening and speaking to the system. Participants are instructed to begin their training here before playing the Mission Game. This module also teaches how to work with important components of the system, such as the speech recognizer. Alelo's Skill Builder also teaches the history and culture of Afghanistan, and includes customs, rules of etiquette and politeness as a necessary component of successfully accomplishing missions. (*Tactical Pashto User's Manual*, 2008, p. 8)

> The *Mission Game* teaches participants how to interact with Afghanis in a videogame that simulates real-life tasks and missions. Participants learn to gesture via a character intended to represent them, and they can practice speaking into the microphone and listening to computer-generated characters that respond to what they say and do. In this module, participants have the opportunity to demonstrate how well they have learned the language. They "win" the game by completing their mission successfully. Participants are less likely to

[13] An earlier version of the software provided to participants also included an Arcade game, but participants did not use this module for this study.

be successful in the Mission Game portion of the software if they display cultural insensitivity and are more likely to be successful if proper respect is shown.[14] (ibid.)

The software also has a reference tool, the *WebWizard*, which explains the vocabulary, phrases and translations that are learned in the course.

2.2.2 Pre-Training Survey

Prior to commencing the language and culture training, participants were asked to complete a background questionnaire. In addition to demographic items (e.g., age, gender, ethnicity, educational background, years of military service, rank, etc.), the questionnaire included questions designed to establish a baseline (i.e., pre-training assessment) of participants' self-efficacy and motivation to learn. Participants were asked to rate 12 items on a 7-point Likert scale (1 = *strongly disagree*; 2 = *disagree somewhat*; 3 = *disagree*; 4 = *not sure*; 5 = *agree somewhat*; 6 = *agree*; 7 = *strongly agree*). Eight items assessed their self-efficacy—i.e., their perceived ability to speak and/or understand the Pashto/Dari language and Afghan culture, to interact with the Afghan public, and to play videogames—while the other four items measured their motivation to learn a new language. See Annex C for the pre-training survey questions.

2.2.3 Interim Survey

At approximately 10-hour intervals within the 40-hour instruction period (i.e., at roughly 10, 20, and 30 hours of training time), participants were asked to complete an "interim" survey. Only seven of the 25 participants completed the interim survey after 10 hours of training, and no-one completed the survey after 20 or 30 hours of training. The survey included 10 items designed to assess participants' self-efficacy (three items) as well as their evaluation of the training software (seven items). All items were rated on a 7-point scale. Participants were also encouraged to provide comments/suggestions regarding any aspect of their training with the software. See Annex D for the interim survey questions.

2.2.4 Post-Training Survey

Participants were asked to complete a final, post-training survey after finishing approximately 40 hours of training. Only five participants completed the post-training survey. The survey contained 55 items designed to assess participants' post-training self-efficacy (six items) and motivation (eight items) as well as their subjective evaluations of the training software (41 items). All items were rated on a 7-point scale. In the survey, participants were also asked to specify the number of hours they spent on the program per day and to describe any strategies that they used to aid in their learning. Participants were encouraged to (a) provide comments regarding the chapters or scenarios as well as the utility of the software as a pre-deployment training tool, (b) describe how the software compares to any other Afghan culture and language training they have had, and (c) provide suggestions for the improvement of current pre-deployment culture and language training. See Annex E for the post-training survey questions.

[14] Note that the history and culture taught through the software, although a welcome and necessary component of the training, should be understood as an introduction to Afghan history and culture and is not meant to provide or instill within the participant an extensive, systemic understanding of Afghan culture, history and practices. Likewise, the concept of culture represented here within the software should be seen as providing culture knowledge, which may be a stepping stone to cultural competence, but does not represent or instill cultural competence in a broader or more holistic sense.

2.2.5 Performance Measures

Participants' performance on the OLCTS was obtained from data logged by the Alelo software. Two types of performance measures were obtained: (1) quiz scores, and (2) correct speech attempts.

2.2.5.1 Quiz Scores

Within the *Skill Builder* component of the software, participants were encouraged to complete a quiz at the end of each chapter/lesson. Each quiz was comprised of a series of questions with varying response types, including true/false, multiple choice, matching, and speaking (i.e., audio-recording a response).

Note that completion of the quizzes was optional (i.e., participants were not required to take a quiz prior to moving on to the next lesson), and each quiz could be completed as many times as desired, with only the most recent score being recorded; however, the number of quiz attempts (for any given quiz) was not recorded by the software. Because the number of different quizzes completed across participants varied considerably, ranging from one to seven ($M = 3.23$; $SD = 1.86$), quiz scores were measured as an overall average percentage (i.e., percentage on each quiz divided by the total number of quizzes that were logged for each participant).

2.2.5.2 Correct Speech Attempts

Each chapter in the OLCTS provides participants with the opportunity to practice speaking the words and phrases that they learn. The Alelo software tracks the number of correct speech attempts as well as the overall number of speech attempts made by each participant. Because the number of chapters completed across participants varied considerably, ranging from one to ten ($M = 5.58$; $SD = 2.77$), correct speech attempts were measured as an overall average percentage (i.e., percentage of correct speech attempts divided by the total number of lessons completed).

2.3 Procedure

Temporary language and culture labs were set up to conduct the study at both CFB Kingston and CFB Gagetown. Ten DRDC Toronto laptops were sent to each site, along with consent forms for participants. Each laptop contained all study materials, including the training video (see below), all participant surveys, and the Alelo training software.

The lab set-up was configured with a dedicated "Dashboard Training Manager" computer, which enabled each participant to create a personal user account and allowed each participant's progress in the training to be tracked, regardless of the laptop they were using. To ensure participant anonymity, each participant was required to create a 10-digit personal identification number (PIN) comprised of the first three letters of their mother's maiden name, the year they were born, and the first three letters of the city where they were born. Throughout the duration of the study, participants were prompted to enter their PIN each time they opened the training software or a survey.

Participants first viewed a 15-minute training video on their laptops. The video was created by the DRDC research team and provided (a) the purpose and objectives of the study, (b) requirements for participating in the study and the process for informed consent, (c) instructions for completing the surveys, (d) instructions for completing a time log, (e) instructions for navigating through the training software, and (f) trouble-shooting tips.

Participants used the latest version of the OPLCT or ODLCT course package. Training hours were not consecutive (i.e., they were not set according to a pre-defined schedule); rather, the

hours were incorporated into participants' schedules at their convenience and could take place over a period of several months. During the study, participants were asked to note the date and duration of training in a training log (see Annex F for the training log).[15]

[15] Unfortunately, because training logs could be removed from the lab and taken home by participants, few were actually returned at the end of the study.

3 Analyses

3.1 Quantitative Data Analysis

Participants' responses to the survey questions were descriptively analysed in terms of means, standard deviations, and frequencies. Due to the small sample size, we were unable to statistically analyze group differences in survey responses between Kingston participants who received training in Pashto versus Gagetown participants who received training in Dari. Nor were we able to analyze differences between participants with previous deployment experience to Afghanistan versus those with no such previous experience. For instance, as mentioned earlier, it was originally anticipated that participants who had previously deployed to Afghanistan ("experienced" group; $n = 14$) would have higher initial levels of self-efficacy and self-reported knowledge of the Pashto/Dari language and Afghan culture compared to those who had never deployed to Afghanistan ("novice" group; $n = 11$). Where relevant, trends in response patterns for the different groups (i.e., Kingston vs. Gagetown, and "experienced" vs. "novice") are highlighted; however, future research using a larger sample size will be required to verify the findings obtained in this study.

Participants' training performance (i.e., quiz scores and correct speech attempts) was also descriptively analysed in terms of means, standard deviations, and frequencies. Again, due to the small sample size, it was not possible to statistically analyze group differences in performance, nor was it possible to statistically examine the relationship between survey responses and performance data.

3.2 Qualitative Data Analysis

Responses to open-ended questions were used to contextualize the quantitative results and to illustrate particular quantitative findings. Themes and issues pertaining to specific open-ended questions were categorized and are presented in the Results section. Complete responses to open-ended questions are provided in Annex G.

4 Results

4.1 Pre-Training Survey Results

As Table 2 shows, 14 of 25 participants (56%) indicated that they had previously deployed to Afghanistan; eight of these participants were from the Kingston site and the other six were from Gagetown. Of these 14 participants (i.e., the "experienced" group), eight (57.14%) indicated that they had received pre-deployment culture and language training. However, only two of these participants (25%) felt that the CAF language training they had received prior to deployment was sufficient, whereas six participants (75%) felt that the pre-deployment culture training they had received was sufficient.

Table 2: Pre-Deployment Culture and Language Training

	Total (*N* = 25)	**Kingston (*n* = 10)**	**Gagetown (*n* = 15)**
Number of participants who had previously deployed to Afghanistan	14/25 (56%)	8/10 (80%)	6/15 (40%)
Number of participants who received pre-deployment culture and language training	8/14 (57.14%)	5/8 (62.5%)	3/6 (50%)
Number of participants who felt that the language training they received was sufficient	2/8 (25%)	0/5 (0%)	2/3 (66.67%)
Number of participants who felt that the culture training they received was sufficient	6/8 (75%)	3/5 (60%)	3/3 (100%)

Open-ended responses of 11 participants who had received or had personally sought out language and culture training before deploying to Afghanistan suggested some consistency in the form of training provided by the Department of Foreign Affairs and International Trade's (DFAIT) Centre for Intercultural Learning (CIL) and delivered at the Peace Support Training Centre (PSTC). Responses also suggested that a short period of time was provided for culture and language training, with some participants indicating they received an hour of training, and others, a day.

4.1.1 Baseline Knowledge and Familiarity

Participants were asked a series of questions pertaining to their current (i.e., pre-training) level of knowledge of the Pashto or Dari languages and Afghan culture as well as their experience with videogame technology and training. All 10 participants from Kingston responded to these questions whereas only four participants from Gagetown responded.[16]

4.1.1.1 Baseline Knowledge of Pashto/Dari

Participants were asked to rate their level of knowledge of the Pashto or Dari language using a 5-point Likert scale (1 = *none*; 2 = *a little*; 3 = *some*; 4 = *quite a bit*; 5 = *a great deal*). Of the 14 participants who responded, the mean rating was 1.64 (*SD* = 0.63), indicating that, overall, they had very little prior knowledge of either language. Specifically, six participants (42.86%) reported no knowledge of the language, seven (50%) reported "a little" knowledge, and one (7.14%) reported "some" knowledge.

[16] Due to technical issues with the survey software, 11 participants were unable to access some of the survey questions.

4.1.1.2 Baseline Knowledge of the Afghan Culture

Despite having little understanding of the Afghan language prior to training, participants overall indicated that they had some degree of prior knowledge of the Afghan culture (M = 3.00 out of a possible 5.00, SD = 0.78). Specifically, four participants (28.57%) indicated having "a little" knowledge of Afghan culture, six participants (42.86%) indicated "some" knowledge, and four participants (28.57%) reported "quite a bit" of knowledge.

Table 3 shows the mean levels of language and cultural knowledge for CIMIC participants from the Kingston site and the "soon-to-be deploying" participants from Gagetown, as well as for participants with and without prior Afghanistan deployment experience ("experienced" and "novice" participants, respectively). Recall that these two different group comparisons are not independent samples of four different groups but, rather, reflect the same sample of participants categorized in two different ways (i.e., based on language of training in the first case and previous deployment experience in the second). Overall, mean ratings of language and cultural knowledge were slightly higher for Kingston participants compared to Gagetown participants and for the experienced group compared to the novice group.

Table 3: Mean Levels of Baseline Knowledge

	Kingston (n = 10)	**Gagetown (n = 4)**	**Experienced (n = 11)**	**Novice (n = 3)**
Baseline Knowledge of Pashto/Dari	1.80 (.63)	1.25 (.50)	1.73 (.65)	1.33 (.58)
Baseline Knowledge of the Afghan Culture	3.20 (.79)	2.50 (.58)	3.09 (.83)	2.67 (.58)

Note: Standard deviations are presented in parentheses.

4.1.1.3 Familiarity with the Training Modality

To obtain a better understanding of participants' level of comfort with the videogame technology, participants were asked several questions about their previous experience in playing videogames. First, they were asked to indicate how often they play videogames for fun (1 = *never*; 2 = *rarely*; 3 = *sometimes*; 4 = *quite a bit*; 5 = *a great deal*). Of the 14 respondents, the mean rating was 2.57 or about halfway between "rarely" and "sometimes" (SD = 1.28). Five participants (35.71%) indicated that they "never" play videogames for fun, five others (35.71%) reported "sometimes," and four (29.57%) responded "quite a bit."

Participants were also asked about their previous experience with training software/technology and, more specifically, videogame training. Of the 14 participants who responded, nine (64.3%) reported having previous experience with training software/technology; seven of these nine (77.8%) indicated that the training software/technology was related to their work with the CAF. Moreover, seven of the 14 respondents (50%) indicated that they had had previous experience with videogame training; for all seven, the videogame training was related to their work with the CAF. As Table 4 illustrates, there did not appear to be significant differences in experience with videogame training technology between Kingston and Gagetown participants or between experienced and novice participants.

Table 4: Experience with Videogame Training

	Kingston (*n* = 10)	**Gagetown (*n* = 4)**	**Experienced (*n* = 11)**	**Novice (*n* = 3)**
Number of participants who had previous experience with any training software/technology	6/10 (60%)	3/4 (74%)	6/11 (54.5%)	3/3 (100%)
Number of participants whose experience with training software/technology was related to their work with the CAF	5/6 (83.3%)	2/3 (66.7%)	5/6 (83.3%)	2/3 (66.7%)
Number of participants who had experience with videogame training	5/10 (50%)	2/4 (50%)	6/11 (54.5%)	1/3 (33.3%)
Number of participants whose experience with videogame training was related to their work with the CAF	5/5 (100%)	2/2 (100%)	6/6 (100%)	1/1 (100%)

4.1.2 Pre-Training Self-Efficacy

Participants' pre-training self-efficacy was evaluated by asking them to rate eight items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). All 25 participants responded to these items. Across the eight items, the mean rating was 4.10 (*SD* = 1.60). As Table 5 shows, participants were *least* confident in their current (i.e., pre-training) ability to speak Pashto/Dari (*M* = 2.24; *SD* = 1.90) or in their ability to listen and understand Pashto/Dari (*M* = 2.00; *SD* = 1.47). They were *most* confident in their ability to master new material (*M* = 5.28; *SD* = 0.95) and to play videogames (*M* = 5.68, *SD* = 1.38). Thus, despite not having the current language skills required for deployment in Afghanistan, the majority of participants had confidence in their ability to benefit from the training.

Table 5: Means and Frequencies for Pre-Training Self-Efficacy (N=25)

	SD	**D**	**DS**	**NS**	**AS**	**A**	**SA**	***M* (*SD*)**
I am confident in my ability to speak Pashto/Dari words and phrases while deployed.	15	3	1	1	3	1	1	2.24 (1.90)
I am confident in my ability to listen and understand Pashto/Dari while deployed.	15	3	2	2	3	-	-	2.00 (1.47)
I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.	4	3	2	4	6	4	2	4.00 (1.94)
I am confident that the training I have received so far has prepared me for interaction with the public in Afghanistan.	8	3	3	4	6	1	-	3.00 (1.73)
I am confident in my ability to play videogames.	-	1	1	2	6	6	9	5.68 (1.38)
I am confident in my ability to master new material in learning situations.	-	-	-	2	6	9	8	5.92 (0.95)
I am confident in my ability to learn Pashto/Dari words and phrases well.	-	-	3	2	10	5	5	5.28 (1.24)
I am confident in my ability to make a formal greeting when introduced to Afghan individuals while on deployment.	4	2	1	1	6	6	5	4.64 (2.14)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

Contrary to expectations, mean ratings of self-efficacy were not significantly higher for the "experienced" group (M = 4.18) compared to the "novice" group (M = 3.99). Nevertheless, participants who had previously deployed to Afghanistan did appear to have somewhat more confidence in their ability to make a formal greeting compared to those who had never deployed to that country (*M* = 5.36 vs. *M* = 3.73).

Table 6: Mean Levels of Pre-Training Self-Efficacy across Groups

	Kingston (*n* = 10)	**Gagetown (*n* = 15)**	**Experienced (*n* = 14)**	**Novice (*n* = 11)**
I am confident in my ability to speak Pashto/Dari words and phrases while deployed.	2.10 (1.66)	2.33 (2.09)	2.21 (1.63)	2.27 (2.84)
I am confident in my ability to listen and understand Pashto/Dari while deployed.	1.70 (0.82)	2.20 (1.78)	2.29 (1.49)	1.64 (1.43)
I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.	4.00 (2.45)	4.00 (1.60)	4.14 (2.03)	3.82 (1.89)
I am confident that the training I have received so far has prepared me for interaction with the public in Afghanistan.	3.30 (1.89)	2.80 (1.66)	3.07 (1.86)	2.91 (1.64)
I am confident in my ability to play videogames.	4.90 (1.37)	6.20 (1.15)	5.50 (1.45)	5.91 (1.30)
I am confident in my ability to master new material in learning situations.	5.50 (1.18)	6.20 (0.68)	5.71 (1.14)	6.18 (0.60)
I am confident in my ability to learn Pashto/Dari words and phrases well.	4.60 (1.17)	5.73 (1.10)	5.14 (1.29)	5.45 (1.21)
I am confident in my ability to make a formal greeting when introduced to Afghan individuals while on deployment.	4.90 (2.13)	4.47 (2.20)	5.36 (1.82)	3.73 (2.24)
Average Self-Efficacy	**3.88 (1.58)**	**4.24 (1.53)**	**4.18 (1.59)**	**3.99 (1.64)**

Note: Standard deviations are presented in parentheses.

4.1.3 Pre-Training Motivation

Participants' motivation to learn during the training was evaluated by asking them to rate four items on a 7-point Likert scale (1 = *strongly disagree*; …; 7 = *strongly agree*). As Table 7 shows, most participants were quite motivated to learn Pashto/Dari, with an average rating of 5.83 (*SD* = 1.22) across the four items.

Table 7: Means and Frequencies for Pre-Training Motivation (N=25)

	SD	**D**	**DS**	**NS**	**AS**	**A**	**SA**	***M* (*SD*)**
I would like to learn as many languages as possible.	-	1	2	3	8	3	8	5.36 (1.47)
If I improve my language proficiency by successfully completing language training, I will have an opportunity to better use my skills and abilities.	-	-	3	1	2	8	11	5.92 (1.35)
It is important for people to learn foreign languages.	-	-	-	-	5	8	12	6.29 (0.79)
I plan on learning as much Pashto/Dari as possible.	-	1	-	2	7	6	9	5.76 (1.27)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

Based on the mean ratings shown in Table 8, it appears that Gagetown participants were more motivated to learn Pashto/Dari compared to Kingston participants (M = 6.27 vs. M = 5.00). This is expected given that all Gagetown participants were planning to deploy within a few months, making language and culture training especially relevant for them. Pre-training motivation was also slightly higher for participants who had never deployed to Afghanistan compared to those who had previously deployed.

Table 8: Mean Levels of Pre-Training Motivation across Groups

	Kingston (n = 10)	**Gagetown *(n = 15)***	**Experienced (n = 14)**	**Novice (n = 11)**
I would like to learn as many languages as possible.	5.00 (1.49)	5.60 (1.45)	5.29 (1.44)	5.45 (1.57)
If I improve my language proficiency by successfully completing language training, I will have an opportunity to better use my skills and abilities.	5.60 (1.65)	6.13 (1.13)	5.86 (1.51)	6.00 (1.18)
It is important for people to learn foreign languages.	6.40 (0.70)	6.20 (0.86)	6.21 (0.80)	6.36 (0.81)
I plan on learning as much Pashto/Dari as possible.	5.00 (1.49)	6.27 (0.80)	5.36 (1.45)	6.23 (0.79)
Average Motivation	**5.50 (1.33)**	**6.05 (1.06)**	**5.68 (1.30)**	**6.01 (1.09)**

4.2 Interim Survey Results

4.2.1 Interim Self-Efficacy

After completing approximately 10 hours of training, participants' self-efficacy was again evaluated by asking them to rate three items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). All three items were also included in the pre-training survey, thus allowing us to (non-statistically) observe whether self-efficacy ratings increased after participants had completed some of the training. Because the post-training survey was completed by only seven participants, all findings should be interpreted cautiously.

As Table 9 shows, participants' overall self-efficacy ratings increased between pre-training (M = 1.95; SD = 1.23) and interim training (M = 4.19; SD = 1.72). Specifically, participants' confidence in their ability to speak Pashto/Dari words and phrases seemed to improve, as did participants' confidence in their ability to listen and understand the language. There was a smaller improvement in participants' confidence with respect to their cultural knowledge and skills. Note, however, that pre-training cultural knowledge was already relatively high in comparison to language self-efficacy.

Table 9: Changes in Self-Efficacy from Pre-Training to Interim Training (n=7)

	Pre-training[a]		Interim training	
	M	***SD***	***M***	***SD***
I am confident in my ability to speak Pashto/Dari words and phrases while deployed.	1.43	0.79	4.14	1.68
I am confident in my ability to listen and understand Pashto/Dari while deployed.	1.29	0.49	3.43	2.07
I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.	3.14	2.41	5.00	1.41
Average Self-Efficacy	1.95	1.23	4.19	1.72

[a]Means and standard deviations for the pre-training survey are based on the seven participants who also completed the interim survey.

4.2.2 Interim Evaluation of the Training Software

Participants' subjective evaluation of the training software was examined by asking them to rate seven items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). The average rating across all seven items was 5.12 (*SD* = 1.40), indicating that, overall, participants perceived the software to have some utility as a training tool while they were engaged in the training. Mean ratings ranged from a low of 4.14 (*SD* = 2.27) for Entry 1 in Table 10 to a high of 5.86 (*SD* = 1.22) for Entry 6.

Table 10: Interim Evaluation of the Training Software (n=7)

	SD	**D**	**DS**	**NS**	**AS**	**A**	**SA**	***M* (*SD*)**
I am confident that OLCTS is preparing me for interaction with the public in Afghanistan.	2	-	-	1	1	3	-	4.14 (2.27)
OLCTS is providing me with language skills that are useful for Afghanistan.	-	-	1	-	2	3	1	5.43 (1.27)
OLCTS is providing me with cultural knowledge and skills that are useful for Afghanistan.	-	-	1	1	2	2	1	5.14 (1.35)
OLCTS is positively impacting my ability to work effectively with members of the Afghan public.	-	-	1	-	2	4	-	5.29 (1.11)
The OLCTS activities are motivating.	-	-	-	1	4	2	0	5.14 (0.69)
If made available to me, I would be likely to use the OLCTS on my own as a way of improving my language and culture capabilities.	-	-	-	1	2	1	3	5.86 (1.22)
OLCTS is providing an enjoyable learning experience.	-	1	1	-	3	-	2	4.86 (1.86)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

4.3 Post-Training Survey Results

4.3.1 Post-Training Self-Efficacy

At the end of the training,[17] participants' self-efficacy was evaluated again by asking participants to rate six items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). Four items were asked in all three surveys (i.e., pre-training, interim, and post-training), and two items were asked at both pre- and post-training but not in the interim survey. As such, it was possible to (non-statistically) observe whether participants' self-efficacy continued to improve from pre-training to post-training. Because the post-training survey was completed by only five participants, all findings should be interpreted cautiously.

Table 11 presents the pre-training, interim, and post-training means and standard deviations for the five participants who completed the post-training survey. Although overall self-efficacy ratings increased slightly between pre-training ($M = 3.13$), interim training ($M = 3.85$), and post-training ($M = 4.23$), a closer examination of some of the individual items suggests a slight decrease in language self-efficacy between interim and post-training for these respondents. This same trend was observed in these participants' ratings of their cultural knowledge and skills. Thus, although language self-efficacy was still somewhat higher at post-training compared to pre-training, no additional gains in language confidence were made after the initial 10 hours of training (i.e., at the interim point).

Table 11: Changes in Self-Efficacy from Pre-Training to Post-Training (n=5)

	Pre-training[a]		**Interim training**		**Post-training**	
	M	***SD***	***M***	***SD***	***M***	***SD***
I am confident in my ability to speak Pashto/Dari words and phrases while deployed.	1.60	0.89	4.00	2.00	3.80	1.64
I am confident in my ability to listen to and understand Pashto/Dari while deployed.	1.40	0.55	3.00	2.35	2.80	1.92
I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.	3.80	2.58	4.80	1.64	4.00	1.42
I am confident that the training I have received so far, including OLCTS, has prepared me for interaction with the public in Afghanistan.[b]	3.20	1.64	3.60	2.51	3.80	2.17
I am confident in my ability to play videogames.	4.40	1.67	-	-	5.00	1.41
I am confident in my ability to make a formal greeting when introduced to Afghan individuals while on deployment.	4.40	2.30	-	-	6.00	1.00
Average Self-Efficacy	**3.13**	**1.61**	**3.85**	**2.13**	**4.23**	**1.59**

[a] Means and standard deviations for the pre-training and interim survey are based on the five participants who also completed the post-training survey.

[b] There were differences in wording for each survey; the pre-training wording was: "*I am confident that the training I have received so far has prepared me for interaction with the public in Afghanistan*"; the interim wording was: "*I am confident that OLCTS is preparing me for interaction with the public in Afghanistan*."

4.3.2 Post-Training Motivation

Participants' motivation was evaluated by asking them to rate eight items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). Four items were also asked in the pre-

[17] "End of the training" does not refer to the completion of 40 hours of training (the ideal amount of training requested of participants) but, rather, refers to varied times at which participants stopped training with the software due to increased tasking, deployment, or completion of the study.

training survey. Thus, for the five participants who completed the post-training survey, their pre- and post-training motivation ratings are presented for comparison (see Table 12).

Self-reported motivation at the end of training was relatively high, with an average rating of 5.50 on a 7-point scale (*SD* = .98). Specifically, the majority of participants were motivated to use their new language skills on the job and were also motivated to receive additional training. Increases in the mean ratings of three of the four items asked in both the pre-training and post-training surveys suggest that participants' motivation to learn new languages (including Pashto/Dari) improved to some extent over the course of training.

Table 12: Post Training Motivation (n=5)

	Pre-training		**Post-training**	
	M	***SD***	***M***	***SD***
I am looking forward to using the language skills I have learned in training, on the job.	-	-	5.40	0.89
I am motivated to use the skills I have learned training with the OLCTS on the job.	-	-	5.20	0.84
I am looking forward to receiving additional training in Pashto/Dari.	-	-	5.60	1.67
If made available to me, I would be likely to use the OLCTS on my own as a way of improving my language and culture capabilities.	-	-	5.60	0.55
I would like to learn as many languages as possible.	4.40	1.14	5.40	1.34
If I improve my language proficiency by successfully completing language training, I will have an opportunity to better use my skills and abilities.	5.40	1.82	5.80	1.64
It is important for people to learn foreign languages.	6.20	0.84	6.20	0.84
I plan on learning as much Pashto/Dari as possible.	4.00	1.23	4.80	0.84
Average Motivation	**5.00**	**1.26**	**5.50**	**1.07**

4.3.3 Post-Training Evaluation of the Software

Participants' post-training evaluation of the software was examined by asking them to rate 41 items on a 7-point Likert scale (1 = *strongly disagree*; … ; 7 = *strongly agree*). Eight items pertained to the software in general (including five items that were also asked in the interim survey), 14 were specific to the chapters/lessons, 11 were specific to the mission game, and eight were specific to the technical features of the software.

4.3.3.1 Overall Evaluation of the Software

As Table 13 shows, participants' overall evaluation of the software was relatively high, with an average mean rating of 5.25 (*SD* = 0.98) on a 7-point scale. On the whole, participants agreed that the software was an effective, easy-to-use training tool for preparing them for interaction with the Afghan public. Participants also indicated that they would be likely to recommend the software as a pre-deployment training tool. Evaluations remained stable between interim and post-training.

Table 13: Post-Training Evaluation of the Software (n=5)

	Interim training		Post-training	
	M	*SD*	*M*	*SD*
OLCTS is an effective training tool in preparation for interaction with the Afghan public.	-	-	5.20	0.84
OLCTS was easy to use.	-	-	5.20	1.48
Overall, I would recommend the OLCTS as a pre-deployment training tool.	-	-	6.20	0.84
OLCTS is providing me with language skills that are useful for Afghanistan.	5.40	1.52	5.60	1.14
OLCTS is providing me with cultural knowledge and skills that are useful for Afghanistan.	5.40	1.14	5.40	0.55
OLCTS is positively impacting/has positively impacted my ability to work effectively with members of the Afghan public.	5.20	1.30	4.80	0.84
OLCTS is providing/provided an enjoyable learning experience.	5.00	1.41	4.80	1.10
The OLCTS activities are/were motivating.	5.00	0.71	4.80	1.10
Average Evaluation of the Software	**5.20**	**1.22**	**5.25**	**0.99**

4.3.3.2 Evaluation of the Chapters

Overall, participants' evaluation of the chapters was positive, with an average rating of 5.27 (*SD* = 1.03) on a 7-point scale across the 14 items. Mean ratings ranged from a low of 5.00 to a high of 5.60, indicating that, on average, participants somewhat agreed that the chapters were clear, effective, efficient, useful, motivating, enjoyable, and easy to use (see Table 14).

Table 14: Evaluation of the Chapters (n=5)

	SD	D	DS	NS	AS	A	SA	*M* (*SD*)
The chapters provided clear goals and objectives for me to work toward.	-	-	-	1	2	1	1	5.40 (1.14)
The chapters provided adequate practice for my Pashto/Dari language skills.	-	-	1	-	3	-	1	5.00 (1.41)
The chapters contained sufficient activities to develop my listening skills.	-	-	1	-	2	2	-	5.00 (1.23)
The chapters contained sufficient activities to develop my speaking skills.	-	-	1	-	2	2	-	5.00 (1.23)
The chapters contained sufficient activities to develop my cultural knowledge and skills.	-	-	-	-	3	2	-	5.40 (0.55)
The chapters contained quizzes and tests that were appropriate to the material covered.	-	-	-	-	3	1	1	5.60 (0.89)
The chapters had a good pace of instruction or presentation of training content/materials.	-	-	-	1	2	1	1	5.40 (1.14)
The chapters kept my attention throughout training.	-	-	1	1	1	1	1	5.00 (1.58)
The chapters taught me words and phrases that I will need in Afghanistan.	-	-	-	2	1	2	-	5.00 (1.00)
The chapters are a useful feature of the OLCTS.	-	-	-	-	3	2	-	5.40 (0.55)
The chapters prepared me for the language requirements of my job/mission(s) when deployed to Afghanistan.	-	-	-	1	3	-	1	5.20 (1.10)
The chapters provided an effective learning experience for me to learn Pashto/Dari language and culture.	-	-	-	-	3	1	1	5.60 (0.89)
The chapters provided an enjoyable learning experience.	-	-	-	1	2	2	-	5.20 (0.84)
The chapters were easy to use.	-	-	-	-	3	1	1	5.60 (0.89)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

4.3.3.3 Evaluation of the Mission Game

Table 16 presents the frequencies, means, and standard deviations for participants' ratings of the mission game. Overall, participants' evaluation of the mission game was slightly less positive than their evaluation of the chapters, with an average mean rating of 5.13 (*SD* = 0.88) on a 7-point scale across the 11 items. Mean ratings ranged from a low of 4.60 to a high of 5.80. Participants were slightly less likely to agree that the mission scenarios provided an effective learning experience (*M* = 5.00; *SD* = 1.00) compared to the chapters (*M* = 5.60; *SD* = 0.89). Participants also found the mission scenarios somewhat less easy to play/use (*M* = 5.00; *SD* = 0.84) in comparison to the chapters (*M* = 5.60; *SD* = 0.89).

Table 15: Evaluation of the Mission Game (n=5)

	SD	D	DS	NS	AS	A	SA	*M* (*SD*)
The mission scenarios provided adequate practice for my Pashto/Dari language and culture skills.	-	-	-	1	3	1	-	5.00 (0.71)
The mission scenarios provided realistic settings for me to practice my Pashto/Dari language and culture skills.	-	-	-	1	2	2	-	5.20 (0.84)
The mission scenarios had clear goals and objectives for me to work toward.	-	-	-	-	3	2	-	5.40 (0.55)
The mission scenarios are a useful feature of the Operational Pashto/Dari training program.	-	-	-	-	3	1	1	5.60 (0.89)
The mission scenarios prepared me for the language requirements of my job/mission(s) if deployed to Afghanistan.	-	-	-	2	1	2	-	5.00 (1.00)
The mission scenarios provided an effective learning experience for me to learn Pashto/Dari language and culture.	-	-	-	2	1	2	-	5.00 (1.00)
The mission scenarios provided an engaging learning experience (that is, kept my attention throughout training).	-	-	1	1	1	2	-	4.80 (1.30)
The mission scenarios provided an enjoyable learning experience.	-	-	-	1	3	1	-	5.00 (0.71)
The mission scenarios were easy to play.	-	-	-	1	3	1	-	5.00 (0.71)
The mission scenarios provided immediate feedback about what I was doing right or wrong.	-	-	-	-	2	2	1	5.80 (0.84)
The mission scenarios provided a challenging experience, without being too difficult.	-	-	1	1	2	1	-	4.60 (1.14)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

4.3.3.4 Evaluation of the Technical Aspects of the Software

Participants' evaluation of the technical components of the software was mixed, with mean ratings ranging from a low of 3.40 to a high of 5.80 on a 7-point scale (see Table 17). Overall, participants believed that the audio and video quality of the software was adequate and were mostly satisfied with the game interface and controls of the software. Participants had somewhat less positive evaluations of the speech recognition accuracy and processing speed.

Table 16: Evaluation of Technical Aspects of Software (n=5)

	SD	D	DS	NS	AS	A	SA	*M* (*SD*)
I was satisfied with the virtual environment provided by the OLCTS.	-	-	-	1	2	2	-	5.20 (0.84)
The feedback provided by the software is useful.								4.60 (1.14)
I was satisfied with the game interface of the OLCTS.	-	-	-	-	3	1	1	5.60 (0.89)
I was satisfied with the controls of the OLCTS.	-	-	-	-	3	1	1	5.60 (0.89)
I found the audio quality of the OLCTS to be adequate.	-	-	-	-	3	-	2	5.80 (1.10)
I found the video quality of the OLCTS to be adequate.	-	-	-	-	3	-	2	5.80 (1.10)
I found the speech recognition accuracy to be adequate.	-	2	2	-	-	-	1	3.40 (2.07)
I found the speech processing speed to be adequate.	-	1	2	-	-	1	1	4.20 (2.17)

SD = Strongly Disagree; D = Disagree; DS = Disagree Somewhat; NS = Not Sure; AS = Agree Somewhat; A = Agree; SA = Strongly Agree.
M = Mean; SD = Standard Deviation.

4.4 Performance Criteria

4.4.1 Quiz Scores

Quiz scores were obtained for all 25 participants. As mentioned previously, the number of different quizzes completed by participants ranged from one to seven ($M = 3.28$; $SD = 1.88$). There did not appear to be significant differences in the average number of quizzes completed between Kingston participants ($M = 3.00$) and Gagetown participants ($M = 3.47$), nor was the average number of quizzes completed between the "experienced" group ($M = 3.07$) and the "novice" group ($M = 3.55$) meaningfully different.

Performance on the quizzes (expressed as the average percentage obtained across all quizzes completed) ranged from 22% to 100%, with an average quiz score of 78.85% ($SD = 18.48$). While quiz scores were slightly higher for Gagetown participants ($M = 80.33\%$) compared to Kingston participants ($M = 76.64\%$), the average quiz score was virtually the same for "experienced" participants ($M = 79.32\%$) and "novice" participants ($M = 78.25\%$), which was contrary to our expectation.

4.4.2 Correct Speech Attempts

Performance data regarding the percentage of correct speech attempts made by participants was obtained for all 25 participants. Correct speech attempts (expressed as the average percentage obtained across all chapters completed) ranged from 19.2% to 71.4%, with an average percentage of 47.31% ($SD = 12.23$). Of note, the percentage of correct speech attempts was lower for Kingston participants ($M = 39.80\%$) than for Gagetown participants ($M = 52.32\%$) but similar for "experienced" ($M = 48.84\%$) and "novice" participants ($M = 45.36\%$). Once again, the latter finding was contrary to our expectation.

5 Discussion

5.1 Summary of Findings

5.1.1 Self-Rated Language and Cultural Knowledge

Feedback provided by participants who had previously deployed to Afghanistan suggests that current pre-deployment training offered in the CAF is well received but is insufficient. For instance, some participants indicated that they had not received language and culture training prior to deployment. Of those who had received some training, only 25% believed that the language training they had received was sufficient.

It should not be surprising, then, that participants' baseline knowledge of the Pashto or Dari language (self-reported at the beginning of the study) was low, regardless of whether or not they had previously deployed to Afghanistan. On the other hand, self-reported knowledge of Afghan culture was somewhat higher in comparison, with approximately 70% of participants indicating that they had at least some cultural knowledge.

Despite not having the ability to speak and understand the Pashto/Dari language, most participants were confident in their ability to master new material and to use the training technology. Moreover, most participants indicated that they were motivated to learn Pashto/Dari. As such, there was great potential for the training software to improve participants' language skills and, perhaps to a lesser extent, their cultural knowledge.

After completing some of the training modules (approximately 10 hours of training), participants' confidence in their ability to speak and understand Pashto or Dari noticeably improved, as reflected in higher mean ratings of self-efficacy in the interim survey compared to the pre-training survey. To a lesser extent, participants' self-rated cultural knowledge also improved. Interestingly, mean self-efficacy ratings were slightly lower at post-training compared to interim training, though still higher than pre-training self-efficacy. One possible explanation for this finding is that participants may have been confident in their abilities at the early stages of training with the software, but once the training increased in complexity as it built upon previously learned lessons, participant confidence may have waned. Note that these findings were based on a very small sample of participants who completed the interim (n = 7) and post-training (n = 5) surveys. Consequently, no inferential statistics were conducted to evaluate whether the differences in mean ratings were greater than would be expected by chance. Thus, future research is required in order to verify these findings.

5.1.2 Training Performance

Across participants, average performance based on quiz scores was good, with an average quiz score of approximately 79%. Quiz scores remained relatively stable across the modules/chapters, which suggests that participants were engaged and able to retain the knowledge taught in each chapter. It is important to note, however, that it was not entirely clear what quiz scores were measuring, as the software allowed quizzes to be taken repeatedly with each subsequent test score overwriting the previous one. Additionally, taking a quiz was optional, and there was no way of tracking how many quiz attempts each participant made. It was also difficult to compare scores across the different quizzes as the questions in each quiz changed to fit the specifics of each chapter, and it was not clear whether the chapters were equally challenging or whether they became progressively more difficult. Thus, it was difficult to measure real changes in performance.

On average, less than half of the speech attempts made by participants during the training were recognized by the software as being correct. Notably, participants who completed the Pashto version had substantially lower percentages correct than did those who completed the Dari version; this difference in performance seems to have had more to do with improved voice recognition in the software's Dari version than actual differences in participants' language skills.

Overall, the performance measures obtained in this study were of limited value and could not be used as reliable indicators of participants' language or cultural knowledge acquisition. Many of the limitations of the performance metrics were due to small sample size and high attrition rate, whereas other limitations resided with the software itself, for example, optional quizzes and the option of completing each quiz numerous times without tracking the number of attempts and scores on each subsequent attempt.

5.1.3 Evaluations of the Training Software

In general, participants judged the software to be of good quality and a welcome potential addition to training already provided. Through their responses to open-ended questions, participants highlighted a number of positive features of the training tool. For instance, some participants commented that the quality of the video and graphics was good, and that they enjoyed the individually paced and interactive nature of the software. One participant remarked that the software is an "excellent one-on-one training tool…Determined students can excel at their own pace and not suffer through death by PowerPoint." Note, however, that most of the qualitative feedback came from the small sample of participants who completed the interim and/or the post-training surveys. Given the high attrition rate in our study's sample, it is unknown whether the same positive evaluations would have been made by those who dropped out of the study or by non-volunteers.

One negative feature pointed out by participants pertained to the voice recognition capability of the software, which some participants rated as somewhat inadequate. However, the study's researchers noted that significant improvements had been made to the Dari version of the software, which was developed after the release of the Pashto version where many of the voice recognition limitations had been identified. One participant also observed that having more detail on the religious and political climate of Afghanistan would be beneficial.

Participants also recommended ways to optimize use of this training technology by CAF personnel, including

- starting the training at the beginning of pre-deployment training so personnel can practice as much as possible before deploying,
- making the system available for home study so that students can practice repeating phrases in private, and
- ensuring that personnel commit to completing the 40 or more hours of training.

5.2 Limitations

This study was limited by the fact that attrition resulted in a small sample size, restricting not only the statistics that could be performed on these data but the findings themselves. Participant attrition appears to be linked in part to both the recommended hours of training (40–100 hours) and the fact that the training took place in a lab rather than a web portal setting where participants could train from home. Despite assurances from the Commanding Officers (COs) for both the Kingston and Gagetown samples, participants, through no fault of their own, were not able to dedicate the time required to the study. Even though they were highly motivated to obtain language and culture training as well as to use the software, the reality was that there were far fewer volunteers from both Kingston and Gagetown than anticipated, as well as a marked drop-

out rate after two or three sessions (i.e., after an average of five quizzes or approximately 10–12 hours of training).

Reasons for the high attrition rate, taken from conversations with the COs and study coordinators on location, included increased tasking in the case of the Kingston participants and an already busy training schedule for the Gagetown participants who were preparing to deploy. Respondents thought that more people might have participated if, rather than being restricted to a lab setting, they could have taken training laptops home or accessed the training software from home via a web portal. These observations underscore the challenge of conducting this kind of research in applied settings. They also emphasize the need for systematic evaluations of training so that training needs may be tailored to mission tasks. Future research may examine the feasibility of web portal access by laptop, ipad, iphone and the like from home or from the field.

5.3 Lessons Learned

Future studies exploring language and culture training software such as that evaluated here may benefit from the lessons learned from the present study. Recommendations for improving participation include shortening the time requirement, if possible without jeopardizing a meaningful evaluation of the software. Given that participants highlighted lack of time as an issue, choosing software that involves less time commitment may be advisable. However, if there is a specific need for in-depth language and culture training, then a study such as this could be endorsed and tested as an official tasking, thus protecting the time that participants require for its completion.

Further, distance from the training lab prevented the research scientists from immediately recognizing and resolving problems as they arose in the course of the study. If the study had been local, the scientists would have been able to facilitate and monitor participation, any software failure, and logbook and quiz completion; as well, they could have conducted regular downloads to back up the data. It is recommended that in future evaluations of culture and language software, the training lab be located in proximity to DRDC Toronto, or, if feasible, a dedicated member of the research team be deployed to the lab setting.

5.4 Future Research

There are a number of software companies offering a variety of capabilities in culture and language training for both military and other applications. Given that the CAF remains interested in language and culture training software, particularly for comprehensive approach situations, further software testing is recommended. Indeed, future research at DRDC Toronto will involve systematic assessments of a range of cultural competency and collaboration training tools and methodologies in order to develop an integrated and configurable training toolkit for the comprehensive approach to operations. It is anticipated that some of these training tools and methodologies will include culture and language training software.

Future research directions to further develop our knowledge of this relatively new approach to language and culture training could include

- determining the validity of the software's claims by following up on training during deployment,
- exploring the practical feasibility of software use in theatre,
- examining whether cultural training leads to overconfidence in abilities or, more generally, the effect of training on confidence in abilities, and
- assessing language capabilities—both pre- and post-training—with the software as a means of determining improvement in language capabilities resulting from software use.

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Annex A Participant Information Sheet

PLEASE READ THIS PAGE CAREFULLY. FEEL FREE TO KEEP THIS GENERAL INFORMATION SHEET.

Background	Defence Research & Development Canada (DRDC) – Toronto is a human sciences laboratory within DRDC, an agency within the Department of National Defence. The following questions support an applied research project that seeks to understand the key social and organizational issues that affect working within the comprehensive approach to operations. One aspect of this project is to explore the potential of tools such as the Tactical Language and Culture Training System (TLCTS), which may facilitate relations with the local public through culture and language education.
Benefits …	… include providing systematic information and data to improve the ability of decision makers to address specific training-related issues based on systematic feedback from participants and to improve education and training for comprehensive missions.
The Questions …	…ask you to consider a few questions concerning your background and experience. We then ask questions directly related to your experience with the TLCTS software. Some of these questions ask for a rating and then provide space for comments related to specific questions. **There are no right or wrong answers to these questions. People may have differing views and we are interested in what your experiences are.**
Your Rights as a Participant:	**1. Your answers are confidential and your participation is completely voluntary.** **2. Only authorized researchers will have access to the data and only group results are presented.** **3. You may skip individual questions and can end your participation at any time.** **4. Your answers will be assigned a unique identification number. If you provide your name, it will be kept confidential and separate from the data file and stored at DRDC Toronto.** **5. The Directorate of Access to Information and Privacy (DAIP) is required by law to screen data to ensure that individual identities are not disclosed, prior to releasing any information request filed under the Access to Information Act or the Privacy Act.** **6. Data will be published in aggregate form without reference to names, or other identifying characteristics.**
Potential Risks:	There are no known risks associated with this study beyond minor eyestrain, fatigue and boredom.
Who can I contact with any additional questions or comments?	Dr. Tara Holton of DRDC Toronto tara.holton@drdc-rddc.gc.ca 416-635-2101
DRDC Toronto Project Manager	Dr. Angela R. Febbraro, PhD JIMP Essentials in the Public Domain Angela.Febbraro@drdc-rddc.gc.ca 416-635-2000 Ext. 3120

DRDC Human Research Ethics Review	**This research has been reviewed, approved and given the ethics protocol number L-741 by the DRDC Human Research Ethics Committee, Dr. Jack Landolt, Chair, who may be reached at 416-635-2120; jack.landolt@drdc-rddc.gc.ca)**

WE APPRECIATE YOUR INPUT AND ASK THAT YOU BE AS HONEST AS POSSIBLE SO THAT OUR INFORMATION ACCURATELY REFLECTS YOUR BACKGROUND AND EXPERIENCE.

Annex B Voluntary Consent Form

Title: Evaluation of Alelo's Tactical Language and Culture Training System for use by the Canadian Forces
Principal Investigators: Dr. Tara Holton, Defence R&D Canada – Toronto
Co-Investigators: Dr. Megan M. Thompson, Defence R&D Canada – Toronto; Dr. Angela R. Febbraro, Defence R&D Canada – Toronto; Dr. Emily-Ana Filardo, Defence R&D Canada – Toronto
Thrust: JIMP Essentials in the Public Domain: Implications for the Tactical Commander (12og) (PG2, Command Thrust)

I_____(name) hereby volunteer to participate as a subject in the study: (DRDC Human Research Ethics Protocol L-741). I have read the Information Sheet and have had the opportunity to ask questions of the Principal Investigator and Co-Investigators. All of my questions concerning this study have been fully answered to my satisfaction.

I understand that:	1. My participation in this study will involve: 1) one 30-minute session in which I am asked to respond to a few survey questions concerning my occupational background and experience and my training experience with the culture and language of Afghanistan. Some of these questions ask for a rating and then provide space for comments related to specific questions; 2) A session of 40 non-consecutive hours of training on the TLCTS system; and 3) four separate 30-minute sessions in which I am asked to respond to a few survey questions concerning my experience with the TLCTS. This will result in a total of 43 study hours. Some of these questions ask for a rating and then provide space for comments related to specific questions. These sessions will take place after approximately every 10 hours of training (10 hours, 20 hours, 30 hours) and at the completion of training (i.e., after 40 hours of training have been completed). 2. My answers are confidential and my participation is completely voluntary. 3. Only authorized researchers will have access to the data and only group results will be presented. 4. I may skip individual questions and can end my participation at any time. 5. My responses will be assigned a unique identification number. If I provide my name and contact information, it will be kept confidential and separate from the data file and stored at DRDC Toronto. 6. The Directorate of Access to Information and Privacy (DAIP) is required by law to screen data to ensure that individual identities are not disclosed, prior to releasing any information request filed under the Access to Information Act or the Privacy Act. 7. Only aggregate data, without identifying characteristics will be published from the study. 8. This is a low risk study with no known side effects beyond minor eyestrain, fatigue and boredom. 9. I may obtain additional information about the research project and have any questions about this study answered by contacting a member of the research team. 10. This research has been reviewed and approved by the DRDC Human Research Ethics Committee, Dr. Jack Landolt, Chair, who may be reached at 416-635-2120; jack.landolt@drdc-rddc.gc.ca. 11. By signing this consent form I have not waived any of my legal rights. 12. I can keep a copy of the Information Sheet and Voluntary Consent Form for my records.

Name (please print):_____ **Date:** _____
Signature: _____

Annex C Pre-Training Survey

Biographical Information

The following questions are designed to give us an understanding of your background. Please answer them prior to beginning your Tactical Pashto training.

1. Age: _____

2. Gender: Male □ Female □

3. First Language _____

4. Other languages spoken and understood: _____

5. Heritage/ethnicity: _____

6. Years of military service: _____

7. Rank: _____

8. Highest level of education _____

9. Will you be deploying on the next rotation to Afghanistan? Yes □ No □

If yes:

(a) What position do you expect to fill? _____

(b) When will your deployment begin? _____

(c) Duration of your deployment? _____ (in months)

(d) Will you be at:

the Provincial Reconstruction Team □ Kandahar Airfield □ Other □ (specify)?

How much interaction with Afghanis do you expect to have while deployed (approx hours per week): ____

10. Have you deployed to Afghanistan before? Yes □ No □

If yes:

(a) Please specify rotations and roles of your previous deployment(s) to Afghanistan

_____

(b) Approximately how many hours a week did you spend interacting with the Afghan population? _____

11. Have you had previous culture and language training for Afghanistan? Yes □ No □

If yes:

(a) Please specify what form of culture and language training you received:

_____

_____

_____

_____

(b) If you have deployed to Afghanistan, was the **CAF language** training you received prior to that deployment sufficient for your experience while deployed? Yes □ No □ N/A □

(c) Please explain further your response to the previous question regarding CAF language training:

_____

_____

_____

_____

_____

(d) If you have deployed to Afghanistan, was the **CAF culture** training you received prior to that deployment sufficient for your experience while deployed?

Yes □ No □ N/A □

Please explain further your response to the previous question regarding CAF culture training:

_____

_____

_____

_____

_____

12. What is your level of knowledge of the Pashto language?

None □ A Little □ Some □ Quite a Bit □ A Great Deal □

13. What is your level of knowledge of Afghan culture?

None □ A Little □ Some □ Quite a Bit □ A Great Deal □

14. How often do you play videogames?

None □ A Little □ Some □ Quite a Bit □ A Great Deal □

15. Have you had any previous experience with any training software/technology? Yes □ No □

If yes:
Please specify your previous experience with training software/technology.

_____

16. Have you ever participated in videogame training? Yes □ No □

    If yes:
    Please specify your previous participation in videogame training

    _____

17. Please describe any language and culture training you have had in preparation for deployment to Afghanistan:

    _____

    _____

    _____

    _____

Part II

Please answer the following questions by selecting the degree to which you agree with each statement.

	Strongly Disagree	Disagree	Disagree Somewhat	Not Sure	Agree Somewhat	Agree	Strongly Agree
1. I am confident in my ability to speak Pashto words and phrases while deployed.							
2. I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.							
3. I am confident in my ability to listen to and understand Pashto while deployed.							
4. I am confident that the training I have received so far has prepared me for interaction with the public in Afghanistan.							
5. I am confident in my ability to play videogames.							

6. I would like to learn as many languages as possible.
7. If I improve my language proficiency by successfully completing language training, I will have an opportunity to better use my skills and abilities.
8. I am confident in my ability to master new material in learning situations.
9. I am confident in my ability to learn Pashto words and phrases well.
10. I am confident in my ability to make a formal greeting when introduced to Afghan individuals while on deployment.
11. It is important for people to learn foreign languages.
12. I plan on learning as much Pashto as possible.

Thank You

Annex D Interm Survey

Please answer the following questions by selecting the degree to which you agree with each statement.

	Strongly Disagree	Somewhat Disagree	Slightly Disagree	Not Sure	Slightly Agree	Somewhat Agree	Strongly Agree
1. I am confident in my ability to speak Pashto words and phrases while deployed.							
2. I am confident I have the cultural knowledge and skills to interact with the Afghan public while deployed.							
3. I am confident in my ability to listen to and understand Pashto while deployed.							
4. I am confident that the TLCTS training is preparing me for interaction with the public in Afghanistan.							
5. TLCTS is providing me with language skills that are useful for Afghanistan.							
6. TLCTS is providing me with cultural knowledge and skills that are useful for Afghanistan.							
7. TLCTS is positively impacting my ability to work effectively with members of the							

Afghan public.							
8. The TLCTS activities are motivating.							
9. If made available to me, I would be likely to use the TLCTS on my own as a way of improving my language and culture capabilities.							
10. TLCTS is providing an enjoyable learning experience.							

Please note any other comments/suggestions that you may have regarding any aspect of your training with TLCTS to this point (including audio/video quality, game interface/controls, speech recognition accuracy/processing speed). If you have no comments/suggestions at this time, please write "no comment" and click continue.

_____

_____

_____

_____

_____

Thank You

Annex E Post-Training Survey

Please answer the following questions by selecting the degree to which you agree with each of the following statements.

	Strongly Disagree	Disagree	Disagree Somewhat	Not Sure	Agree Somewhat	Agree	Strongly Agree
1. I am confident in my ability to speak Pashto words and phrases while deployed.							
2. I am confident that I have the cultural knowledge and skills to interact with the Afghan public while deployed.							
3. I am confident in my ability to listen to and understand Pashto while deployed.							
4. I am confident that the training I have received so far, including the TLCTS, has prepared me for interaction with the public in Afghanistan.							
5. I am confident in my ability to play videogames.							

6. I am looking forward to using the language skills I have learned in training, on the job.							
7. I would like to learn as many languages as possible.							
8. I am looking forward to receiving additional training in Pashto.							
9. If I improve my language proficiency by successfully completing language training, I will have an opportunity to better use my skills and abilities.							
10. I am confident in my ability to make a formal greeting when introduced to Afghan individuals while on deployment.							
11. It is important for people to learn foreign languages.							
12. I plan on learning as much Pashto as possible.							

13. TLCTS has provided me with language skills that are useful for Afghanistan.							
14. TLCTS has provided me with cultural knowledge and skills that are useful for Afghanistan.							
15. TLCTS is an effective training tool in preparation for interaction with the Afghan public.							
16. TLCTS has positively impacted my ability to work effectively with members of the Afghan public.							
17. If made available to me, I would be likely to use the TLCTS on my own as a way of improving my language and culture capabilities.							
18. TLCTS provided an enjoyable learning experience.							
19. TLCTS was easy to use.							
20. The TLCTS activities were motivating.							

21. The feedback provided by the software is useful.							
22. I am motivated to use the skills I have learned training with the TLCTS, on the job.							
23. The Skill Builder provided clear goals and objectives for me to work toward.							
24. The Skill Builder provided adequate practice for my Pashto language skills.							
25. The Skill Builder contained sufficient activities to develop my listening skills.							
26. The Skill Builder contained sufficient activities to develop my speaking skills.							
27. The Skill Builder contained sufficient activities to develop my cultural knowledge and skills.							

28. The Skill Builder included quizzes and tests that were appropriate to the material covered.							
29. The Skill Builder had a good pace of instruction or presentation of training content/materials.							
30. The Skill Builder provided an engaging learning experience (i.e., kept my attention throughout training).							
31. The Skill Builder taught me words and phrases that I will need in Afghanistan.							
32. The Skill Builder is a useful feature of the Tactical Pashto training program.							
33. The Skill Builder prepared me for the language requirements of my job/mission(s) when deployed to Afghanistan.							

34. The Skill Builder provided an effective learning experience for me to learn Pashto language and culture.							
35. The Skill Builder provided an enjoyable learning experience.							
36. The Skill Builder was easy to use.							
37. The Arcade Game provided adequate practice for my Pashto language skills.							
38. The Arcade Game had clear goals and objectives for me to work toward.							
39. The Arcade Game is a useful feature of the Tactical Pashto training program.							
40. The Arcade Game provided an effective learning experience for me to learn Pashto language and culture.							

41. The Arcade Game provided an engaging learning experience (that is, kept my attention throughout training).							
42. The Arcade Game provided an enjoyable learning experience.							
43. The Arcade Game was easy to play.							
44. The Mission Game provided adequate practice for my Pashto language and culture skills.							
45. The Mission Game provided realistic scenarios for me to practice my Pashto language and culture skills.							
46. The Mission Game had clear goals and objectives for me to work toward.							
47. The Mission Game is a useful feature of the Tactical Pashto training program.							

48. The Mission Game prepared me for the language requirements of my job/mission(s) if deployed to Afghanistan.							
49. The Mission Game provided an effective learning experience for me to learn Pashto language and culture.							
50. The Mission Game provided an engaging learning experience (that is, kept my attention throughout training).							
51. The Mission Game provided an enjoyable learning experience.							
52. The Mission Game was easy to play.							
53. The Mission Game provided immediate feedback about what I was doing right or wrong.							
54. The Mission Game provided a challenging experience, without being too difficult.							

55. I was satisfied with the virtual environment provided by the TLCTS.							
56. I was satisfied with the game interface of the TLCTS.							
57. I was satisfied with the game controls of the TLCTS.							
58. I found the audio quality of the TLCTS to be adequate.							
59. I found the video quality of the TLCTS to be adequate.							
60. I found the speech recognition accuracy to be adequate.							
61. I found the speech processing speed to be adequate.							
62. Overall, I would recommend the TLCTS as a pre-deployment training tool.							

1. How many hours did you spend on this program per day? _____

2. Please provide any comments you have regarding the Skill Builder.

_____

_____

_____

3. Please provide any comments you have regarding the Arcade Game.

4. Please provide any comments you have regarding the Mission Game.

5. Will the TLCTS software provide soldiers with meaningful information important to their deployment to Afghanistan? Yes or No? Please explain.

6. If you answered ‘yes’ to the previous question, how much time would you recommend that soldiers train with the Tactical Pashto Language and Culture Training System software, prior to deployment? (If you answered “no” to the previous question, please type “N/A” and click continue.)

_____

_____

7. Please describe how the TLCTS software compares to any other culture and language training you have had for Afghanistan.

_____

_____

_____

_____

_____

_____

_____

8. Do you have any suggestions for the improvement of current pre-deployment culture and language training in preparation for CIMIC duties?

_____

_____

_____

_____

_____

_____

Thank You

Annex F Training Log

Please note the time and duration of each session you trained with the Tactical Pashto Language and Culture Training System software to make up the 40 training hours in this study.

Date	Duration of Training	Focus
(e.g. March 8th, 2010)	(e.g. 2 hours)	(e.g. Skill builder 1 hour, Arcade Game .5 hour, Mission Game .5 hour)

Annex G Qualitative Responses

Pre-training Survey

Please specify what form of culture and language training you received.

A "Mirror Image" course. This consisted of reversal of roles; CAF members became insurgents and became immersed in the training and doctrinal environment for a period of two weeks.
Afghani culture with some Pashto training
Briefings by Afghan Canadians.
One afternoon of basic awareness in April of 2007
Personal research through reading, film and music as well as small group Pashto lessons at personal expense together with a small group of likeminded members over one year before deployment.
Pre-deployment training at Petawawa in Jan 2005
PSTC package 2005; LFCA Area Troops OSG Afghan Culture Training package (2007)
Theater mission specific training (TMST); Misc courses conducted at Army level.

Please describe any language and culture training you have had in preparation for deployment to Afghanistan.

Approx one hour of classroom intro to basic greetings as part of the DFAIT cultural training package and then approx one hour of the same many months later during pre-deployment training in Petawawa.
DFAIT Ongo Bongo and 1 period on Afghan culture
Lectures from PSTC on basic culture and language
Mirror Image Course
One day where a CA came to the group at PSTC during pre-deployment training. Other information I gather by talking with people who have deployed and my own research as an analyst.
PSTC training
Seminar and readings
Some classroom periods on cultural aspects and very little on spoken language.
The one afternoon of basic language and greetings.

Please list the 5 games you play most often and the system on which you play each.

Call of Duty - XBox 360; Assassins Creed - XBox 360; World of Warcraft - PC; Dragon Age - XBox 360; Starcraft 2 - PC
Call of Duty; Battlefield; Playstation 3
Civilization 5 (PC); Fallout 3 (PC); Fear 2 (PC)
Civilization IV; Battlefield 2; Starcraft; Half-life 2; Magic Online
COD Black Ops (XBox 360); Assassins Creed 2 (XBox 360); Mario Kart (Wii), Mario World (Wii)
Fallout 3 - PC; Starcraft 3 - PC; Oblivion - PC; Demigod - PC; Sollitaire - PC
Resident Evil 4 (Wii)l Tribal Wards (PC); Halo 2 (XBox)
Splinter Cell (Wii); Halo 3 (XBox 360); Command & Conquer (PC)
Starcraft (PC), Call of Duty Modern Warfare (XBox 360), Smash Bros (Game Cube), Civilization II (PC), Fallout 3 (XBox 360)

Please specify your previous experience with training software/technology.

AFV; Online surveys
DRDC Convoy Ops Computer Game training in 2009
Monitor Mass; various other military software that changes EVERY YEAR
Observed and tried the VBS? software during pre-deployment trg, in a simulation of convoy ops for an afternoon, in 2007 as part of pre-deployment.
On line courses through the DWAN
Rosetta Stone language learning software (I have some French but am nowhere near fluent), Lynda.com MS Office Tutorial programs
Rossetta Stone - French, Spanish and a bit of Pashtun
SATS/FATS range and company level first person shooter-type computer simulator in Petawawa.
Some CBT in the school

For that training software/technology that was related to your work with the CAF, please specify how it was related:

AFV was for recognizing armoured fighting vehicles because I am infantry. The surveys were during my tenure at RMC and it was for the purpose of gathering information for myself and for my peers in the interests of earning my degree.
All professional development in language training was related to my job in the CAF as part of the Influence Activity Cell with 2 RCR Optimized Battle Group in the Influence Activities Coordination Center.
Convoy ops trg, related to TMST prep.
It was the first step in the course. Once the online training was completed and passed you moved on to the practical stage.
It was used as a training tool for the "Road to High Readiness" package conducted for the TF 3-08 PSYOPS Platoon. It was excellent.
J CATS - tactics; VBS - AACAFF; Monitor Mass - soldier admin

Please specify your previous participation in videogame training.

FATS training at home unit.
Infantry School Urban Operations Instructors course, name I believe was Special Ops, but unsure if this was actually the software used.
JCATS during courses and exercises
SAT Rge Trg
VBS, JCATS

For that videogame training that was related to your work with the CAF, please specify how it was related:

Game was based for the students to plan and practice battle procedure, then conduct an operation without having to have soldiers and vehicles in the field.
It simulated conventional weapons on a virtual battleground.
JCATS - tactics; VBS - AACAFF
SAT Trg is an indoor, wpns trg platform

Urban Operations Instructors Course, CAFB Gagetown, CTC Infantry School

Interim Survey

Please note any other comments/suggestions that you may have regarding any aspect of your training with ODLCT to this point (including audio/video quality, game interface/controls, speech recognition accuracy/processing speed).

Excellent quality of animation and voice procedure. Even paced learning curve. Friendly useful learning environment
It may be my pronunciation but I find that the speech recognition accuracy is lacking. Even with single words, the system sometimes recognizes a completely different word or phrase.
Overall, the program seemed fairly effective. Unfortunately, I did not have a lot of time available in which to conduct the training properly. I do believe that if more time was spent conducting the training, it would be beneficial. I did experience some difficulties/discrepancies with regards to the voice recognition software and the 'text feedback."
The program needs to be updated for Canadian requirements. The rank structure is based off of British ranks where a cpl commands a section vice a sergeant (Delgay Mesher vs Berak Mesher). The program needs to be updated with personal information. I should be able to say my own rank and name during the program as well as my nationality. Right now, I am very good at being staff sergeant John Smith, not myself. The pronunciation lesson while important is significantly more difficult than the other lessons in the first 10 hours.

Post-training Survey

Were there any strategies that you employed to aid your learning?

It was useful to be able to do the chapters twice if needed.
Reviewed previous lessons at start of day. Kept notes on vocabulary and pronunciation. Used playback very often to hear myself and the computer speak the Pashto.
Write down lots of phrases to qurik the memory. Some repetition

Please provide any comments you have regarding the chapters.

Excellent quality for the video, audio overall presentation mode
It was good that you could go back to refresh.
Short and brief, very good for absorption.

Please provide any comments you have regarding the scenarios.

Good graphics, and the tests were relevant to the lesson. Did not like the voice recognition though.
Well done

Will the ODLCT software provide soldiers with meaningful information important to their deployment to Afghanistan? Please explain.

Excellent one on one training tool; instead of sitting in misc lectures to large groups. Determined students can excel at their own pace and not suffer through death by PowerPoint.
Good training tool but should be started at the beginning of pre-deployment training so they get as much practice as possible before deploying.
Yes
Yes. Greetings are essential.
Yes. Its a start to learn the basics in language and to provide hesitation enough in the prevention of offending a very different culture. System should be made available on software for home study as some students may feel more comfortable repeating phrases in privacy.

If you answered "yes" to the previous question, how much time would you recommend that soldiers train with the Operational Pashto Language and Culture Training System software prior to deployment?

3 hours
3 mornings a week for at least a month
At least 40 hours
For a deployed CIMIC soldier working outside the wire, as much trg as possible just prior to deployment due to memory fade. 40 hour program just prior to deployment.
Program complete paired with cultural education should be mandatory

Please describe how the ODLCT software compares to any other culture and language training you have had for Afghanistan.

Large group lectures and no language trg at all has been the norm. This program is heads and heels above what I have had in the past.
More individually-paced and interactive
n/a; was deployed and trained for other countries

Do you have any suggestions for the improvement of current pre-deployment culture and language training in preparation for CIMIC duties?

Average cultural training overall is insufficient
Perhaps more detail in the religious and political climate would be of further use.

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List of symbols/abbreviations/acronyms/initialisms

ARP	Applied Research Project
CAF	Canadian Armed Forces
CALWC	Canadian Army Warfare Centre
CFB	Canadian Forces Base
CFLI	Canadian Forces Leadership Institute
CFLS	Canadian Forces Language School
CIL	Centre for Intercultural Learning
CO	Commanding Officer
CQ	Cultural Intelligence
CIMIC	Civil-Military Cooperation
DCIMIC	Directorate of Civil-Military Cooperation
DFAIT	Department of Foreign Affairs and International Trade
DLCD	Director of Land Concepts and Designs
DRDC	Defence Research & Development Canada
JIMP	Joint, Interagency, Multinational, Public
LFDTS	Land Force Doctrine and Training System
LOTE	Languages Other Than English
NATO	North Atlantic Treaty Organization
NCM	Non-commissioned Member
OLCTS	Operational Language and Culture Training System
ODLTC	Operational Dari Language and Culture Training
OPLCT	Operational Pashto Language and Culture Training
PIN	Personal Identification Number
PSTC	Peace Support Training Centre
SME	Subject-Matter Expert
TM	Technical Memorandum
UK	United Kingdom
US	United States

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Evaluation of Alelo's Operational Language and Culture Training System for Use by the Canadian Forces:

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The Canadian Armed Forces (CAF) is adopting a comprehensive approach to operations, which is based upon effective joint, interagency, multinational, public (JIMP) collaboration within an increasingly complex security environment (Leslie, Gizewski, & Rostek, 2008). From the military's perspective, one relatively new aspect of the comprehensive approach is an increased and explicit focus on collaboration with members of the local population in theatre. The development of cultural knowledge which enables interaction with the local population is fast becoming a focus of military research. Defence Research and Development Canada, Toronto Research Centre (DRDC Toronto) was asked by the Directorate of Civil-Military Cooperation (DCIMIC) to conduct a preliminary evaluation of a software program entitled "Operational Language and Culture Training System" (OLCTS), created by Alelo, Inc. This software is currently in use in a number of Canada's allies (e.g., the United States, Australia, and the United Kingdom) and focuses on acquiring language skills and cultural knowledge relevant to working among local populations in overseas missions. Performance data were collected through two means: (1) in-game user progress data, including time on task, quiz scores, and speech attempts; and (2) surveys, including descriptive statistics, perceived skill level of comprehension, perceived speaking skill level, cultural interaction skills, software contributions to skills acquisition, and open-ended comments. Study results underscore the continued need for systematic evaluations of training and for tailoring training to the needs of mission tasks.

Les Forces armées canadiennes (FAC) adoptent une approche exhaustive à l'égard des opérations qui est fondée sur une collaboration efficace en contexte interarmées, interorganisationnel, multinational et public (IIMP) dans le cadre d'un environnement de sécurité de plus en plus complexe (Leslie, Gizewski, & Rostek, 2008). Du point de vue militaire, l'un des aspects relativement nouveaux de l'approche exhaustive est un accent accru et marqué sur la collaboration avec la population locale dans le théâtre des opérations. L'acquisition de connaissances culturelles permettant d'interagir avec la population locale devient rapidement un objectif de la recherche militaire. Le Directeur – Coopération civilomilitaire (DCOCIM) a demandé au Centre de recherche de Toronto de Recherche et développement pour la défense Canada (RDDC Toronto) d'effectuer une évaluation préliminaire du logiciel « Operational Language and Culture Training System » (système de formation sur la langue et la culture opérationnelles) (OLCTS) conçu par l'entreprise Alelo. De nombreux alliés du Canada (p. ex., États-Unis, Australie, Royaume-Uni) utilisent actuellement ce logiciel axé sur l'acquisition de compétences linguistiques et de connaissances culturelles pertinentes permettant de collaborer avec les populations locales lors de missions à l'étranger. Des données sur le rendement ont été recueillies de deux façons : (1) données sur les progrès de l'utilisateur dans le monde virtuel, y compris le temps consacré aux tâches, les résultats de test et les tentatives de discours; (2) sondages, y compris des statistiques descriptives, le niveau présumé de compétence en compréhension, le niveau présumé de compétence linguistique, des compétences en relations culturelles, des contributions au logiciel pour l'acquisition de compétences et des commentaires ouverts. Les résultats de l'étude mettent en évidence le besoin continu d'évaluations systématiques de l'instruction et de son adaptation selon les exigences liées aux tâches de mission.

14. KEYWORDS, DESCRIPTORS or IDENTIFIERS (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. They should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location may also be included. If possible keywords should be selected from a published thesaurus, e.g. Thesaurus of Engineering and Scientific Terms (TEST) and that thesaurus identified. If it is not possible to select indexing terms which are Unclassified, the classification of each should be indicated as with the title.)

Culture and Language Training; Canadian Forces; Alelo; JIMP; Computer System