5.14 Innovating Training through Immersive Environments: Generation Y, Exploratory Learning, and Serious Games

Innovating Training through Immersive Environments: Generation Y, Exploratory Learning, and Serious Games

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Abstract. Over the next decade, those entering Service and Joint Staff positions within the military will come from a different generation than the current leadership. They will come from Generation Y and have differing preferences for learning. Immersive learning environments like serious games and virtual world initiatives can complement traditional training methods to provide a better overall training program for staffs. Generation Y members desire learning methods which are relevant and interactive, regardless of whether they are delivered over the internet or in person. This paper focuses on a project undertaken to assess alternative training methods to teach special operations staffs. It provides a summary of the needs analysis used to consider alternatives and to better posture the Department of Defense for future training development.

1.0 INTRODUCTION

There are growing challenges in military training – specifically the staff training of special operations forces. This paper highlights a recent project to assess learning approaches used for staff training. The project primarily focused on conducting a needs analysis and implementing a new method based on the information learned. The new method is a type of serious game which was delivered to a military unit in the Pacific at the end of the project. This serious game not only satisfied an existing need, but it is shaping the culture of those who develop training such that virtual worlds and other immersive environments may be welcomed and used in the coming years.

In addition to providing a review of the project, this paper will also pose questions to consider about the near- and long-term. The needs analysis which enabled the implementation of the serious game also identified some questions that remained unaddressed at the end of the project timeline. The project team continues to assess the questions through a requirements generation process to determine how follow-on projects could better address the challenges identified.

This paper discusses the project for a special operations unit, but the lessons and insights could be applicable to situations in other governmental agencies, learning institutions, and corporate training environments.

2.0 SITUATION

2.1 Problem Statement

The United States Armed Forces face many challenges in this time of constrained resources. The Obama Administration has established a goal to reduce Defense Department budgets by approximately $400 billion through 2023 [1]. Meanwhile, there is a growing requirement in joint military training to

> **Improve staff training at the operational level of war among teams distributed around the globe – both inside and outside of the military establishment.**

This *tyranny of distance*, as the time and space aspects of training have been called, is challenging. In addition to that, a changing demographic among middle-grade staff officers could make the overall situation more challenging than expected. Officers entering the grades of major and lieutenant commander will often start with a staff tour at one of their Service headquarters or with a joint organization like

the Joint Staff or a combatant command. These arriving staff officers have historically posed a challenge because they must quickly acclimate and perform in a significantly different environment with unfamiliar processes. Training developers have addressed these needs in the past with annual, live training events.

A study [2] commissioned in 2008 by the Joint Staff J7's Joint Training and Exercise Division found officers serving on operational-level joint staffs were not performing as well as senior leaders had expected. Reasons cited by the study include the facts that these officers were on their first joint tour, their first staff tour, and their first time working with a diverse workforce such as other military Services and other agencies. Experience points to a lack of process-oriented training on staff techniques and skills. Newly arriving staff members must seek on-the-job training. As a training customer, they represent an underserved audience during their first four to eight months of time on the staff.

Within the next few years, the new staff officers will come from Generation Y. This new demographic becomes an additional factor for training developers to contend with while assessing new approaches. The question becomes

> As Generation Y joins military staffs, what are the challenges and insights training developers should recognize?

This problem also applies to special operations staffs. To address the problem, the project team's initial concept was to increase the number of training events between large-scale, annual exercise. It was suggested that this could sustain performance levels. However, any solutions considered could not result in additional travel time or costs and it had to facilitate staff training of complex scenarios.

2.2 Situational Context

Special operations forces represent a unique arm of national security. Many people are familiar with special operations from the dangerous and heroic missions that have recently made the news. Less known – but of great importance – are the diplomatic aspects of special operations. When not in a combat zone, these mature and highly experienced operators are more often engaged in supporting the United States' diplomatic mission though military-to-military training with partners and allies. They also support the Department of State in training and educating people from the United States Government or allied nations in military planning and execution processes. These types of missions are primarily focused on *building and maintaining relationships*. Performing this mission over long distances is an added challenge.
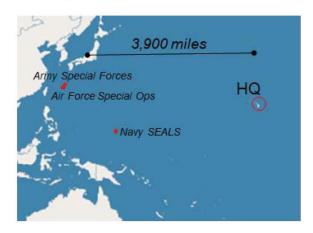

Figure 1. Distributed nature of military units.

Consider the map shown in Figure 1. It shows the locations of a Theater Special Operations Command (TSOC) Headquarters in the Pacific along with their assigned components in Japan and Guam. This command is spread across 4,000 miles, yet they must be able to operate as well as any other staff which resides in the same location. Effective military training helps make this possible.

TSOCs are operational level staffs that focus on planning and executing special operations missions for the combatant command to which they are assigned. They maintain a regional focus whether that be the Pacific, Europe, or the Middle East. There is also a unique TSOC that focuses on training. Special Operations Command Joint Capabilities is charged with the mission to train TSOC staffs in planning processes. They have traditionally done this through academic sessions in a live training environment and through computer-based training.

A word about the military men and women who work on joint staffs: A significant level of a staff's membership is comprised of majors and lieutenant commanders. Around the hallways of the Pentagon they are called *Iron Majors*. This is a term of endearment as they are the heart and soul of a staff – the action officer. Although there are officers senior to them and a strong enlisted force supporting them, the Iron Majors are the workhorse of a joint staff. Why is this? Majors and lieutenant commanders have attained a level that requires them to learn a new skill set. Prior to their arrival on the staff – for about 11 years – they have trained and executed tactical level missions and have become proficient within their own Services. Before moving on to command positions as lieutenant colonels and naval commanders, these Iron Majors are refined in the crucible of a staff where they are asked to take their experiences to new levels. This same situation occurs at the TSOCs. Although TSOC staffs are much smaller than Service and Joint Staffs, the same dynamic is at play.

3.0 NEEDS ANALYSIS

Training of special operations staff officers has essentially the same objective as other training – transmitting knowledge and imparting learning to a group using some type of medium. Good training and education products are based on good pedagogy, and they are informed by a solid needs analysis of the training audience. This is the underpinning of the Instructional System Design method [3]. In the case of the special operations training project, a team of developers decided to conduct a needs analysis to characterize requirements for next generation staff training. They approached the problem by establishing a framework of three primary questions to consider alternatives while ensuring critical elements were considered:

- Who is Generation Y which will soon be a primary training audience?
- What is known about their preferences for learning?
- How might training methods need to change relative to the audience?

3.1 Generation Y and Exploratory Learning

In 2011, the majority of the Department of Defense and TSOC workforce falls into one of three generations as defined by sociologists. Figure 2 shows the generational groups: Baby Boomers (1946-1964), Generation X (1965-1980), and Generation Y (1981-2000). As a way of highlighting the differing experiences of each generation, the figure shows just two of the many technological changes the
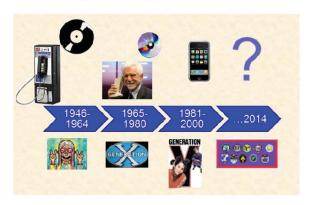

Figure 2. Generations in the workplace, birth years, and technological change.

generations have experienced over time. In fact, members of Generation Y are currently in the military and they have bravely served in the battlefields of Iraq and Afghanistan. Generation Y will begin to arrive in staff positions around the year 2014, if not a bit sooner. This includes their arrival in TSOCs around the globe.

The Joint Staff study [2] identifies problems in training programs for newly arriving staff officers. Note that it was conducted in 2008, before Generation Y was a part of the study population. Experience from the battlefields has shown that Generation Y thinks and acts differently than earlier generations. Training developers at Special Operations Command Joint Capabilities are officers and support contractors experienced in the areas they train to TSOC staffs, but they are not from Generation Y. The resulting situation: those responsible for training development and making decisions on the next generation of training technologies may have vastly different ideas of what is needed by the training audience.

There is a body of work in the literature about Generation Y and their similarities and differences as compared to other generations. As early as 1996, Rieman, Young, and Howes [4] had already identified differences in learning styles among the newest generation. They found Generation Y preferred Exploratory Learning which they characterized by four elements:

- Task oriented
- Time constrained
- Primary goal is *task performance*
- *Learning* is a secondary aspect

How is Generation Y performing differently and does this suggest a need for different training? Yes. While Generation Y has not entered the staffs yet, it was noted they have been serving in our military. Reports from trainers who have worked in Iraq and Afghanistan indicate the junior officers

(Generation Y) have a different approach to operations and learning. In fact, the Department of Defense has commissioned experiments which have specifically studied various elements of junior officers ranging from the need for new training to suggestions that senior leaders increase their trust in the junior officers.

The author wishes to share the experiences of Mr. John Hunter, a fourth grade school teacher, who was invited to present at TED2011 in Long Beach California [5]. John's story is instructive of how a different generation learns – demonstrating how learning and the process of training development may be approached from multiple perspectives and should be a creative undertaking. John makes a key statement:

> *My question to you is, who's in charge of that classroom? It's a serious question: who is really in charge? I've learned to cede control of the classroom over to the students over time. There's a trust and an understanding and a dedication to an ideal that I simply don't have to do what I thought I had to do as a beginning teacher: control every conversation and response in the classroom. It's impossible. Their collective wisdom is much greater than mine, and I admit it to them openly [5].*

When it comes to learning – Generation Y appears to be different. Collaboration through a designed task is important. It has been documented by scholars, observed on battlefields, and acknowledged in classrooms. Trainers and training developers must address this aspect of learning in their approaches.

3.2 Serious Games

The analysis thus far has indicated the need to focus on a changing demographic in the training audience ("who"). It also found literature and experience that indicates a difference in learning style ("what") among this new demographic. This led the project team to consider "how" TSOC training methods need to change relative to the audience preferences.

There are two basic categories of TSOC training: traditional training and immersive learning environments. Traditional training encompasses a host of training tools and methods ranging from computer-based training to live training and written material. TSOC members have the means to take an introductory training course using computer-based lessons. In fact, they are prerequisite for attendance to more advanced, live TSOC training events. Additionally, reports promulgating best practices are published for individual study. A pro of traditional training is its familiarity among trainers and training audiences. Most people in the joint community have been working as professionals in their Services for a decade or more. During this time they have likely come into contact with training exercises and grown accustomed to the current training methods. There is ample history which indicates traditional training is effective.

However, there are cons related to traditional training. Budget constraints and demanding operations tempo among trainers and the training audience restrict live training offerings to a small number each year. In most cases, this translates into a single training event. It is arguable that the indirect costs are substantial. These costs range from poor readiness among the workforce to an unintended inertia hindering new techniques. While computer-based training is more sophisticated than written material, it does not instill a high degree of interaction among users. According to Windham [6], live classroom training is valued because it satisfies a desire for interaction. This craving for interaction will persist into online environments. For this reason, computer-based training's lack of interaction places it in a class similar to written materials.

Immersive learning environments (ILEs) comprise the other alternative looked at in this project. ILEs are "learning situations that are constructed using a variety of techniques and software tools including game-based learning, simulation-based learning and virtual worlds" ([7], p. 2). ILEs can now be found in government organizations. Examples include the CyberProtect game developed by the Defense Information Systems Agency and virtual worlds developed by Defense Acquisition University. These games or worlds harness simulation-based learning to drive a scenario for the audience. Many pros of ILEs can be found in the literature. McNeely [8] notes students often learn things best by doing. Gee [9] argues that what people "are doing when they are playing video games is often good learning" (p. 199). There are, however, cons associated with ILEs. They are characteristically more costly and sophisticated than traditional training methods. This requires a more thorough needs analysis to ensure developing an ILE provides a better training experience than some other method [7]. Nonetheless, the author believes ILEs like serious games will increasingly be used for future TSOC training.

In the TSOC project, a serious game-based tool was used to enhance traditional training approaches. A feasibility assessment was conducted to look at game functionality and user acceptance [10]. Training audience surveys indicated a number of positive attributes of the serious game approach. Highlights of that assessment indicate

serious games are best accepted by TSOC staffs when they:

- focus on key TSOC procedures,
- allow for distributed players, and
- support tailored scenarios.

The assessment found the serious gaming approach was capable of allowing staffs to rehearse necessary planning functions from distributed locations without traveling to a central location. The essential point here is staffs perform best when key procedures are practiced often. These procedures and checklists are what drive staffs during crisis situations. Secondly, not only to staffs desire additional training, but they also desire access to skilled observers who can provide feedback. The web-based, distributed approach of the game provided a capability for trainers from Special Operations Command Joint Capabilities to reach out to training audiences from their home location. Although Special Operations Command Joint Capabilities cannot physical travel to a TSOC more than one or two times per year, a distributed game allows them to support the TSOC requests. Finally, the serious game approach delivers special operations staff training using a tailored scenario at a time and place of the audience's choosing [10]. Staffs do not value "universal" training scenarios. Special operations staffs work at a regional focus and any training must support tailored scenarios in a cost effective process.

4.0 A LOOK TOWARDS THE FUTURE

We now accept the fact that learning is a lifelong process of keeping abreast of change. And the most pressing task is to teach people how to learn. —Peter Drucker

Observations made during the TSOC project helped to successfully deliver a serious game-based training method to a TSOC in 2011. The project sought to determine the needs of a changing staff demographic, compare those needs to existing training approaches, and introduce new approaches when gaps were identified. The project found enough evidence to suggest Generation Y has different training needs. It also found that immersive learning environments like serious games can satisfy those needs.

In the future, the concept for TSOC serious games is for them to fully complement annual live training. This is expected to maintain proficiency levels closer to optimal levels – thereby reducing the performance degradation currently witnessed in once-per-year training cycles. This new, responsive training method uses distributed and virtualized training technologies to establish simulated scenarios. It can be delivered to military as well as other agencies and partners. Training becomes not only more frequent but also more efficacious in developing our human capital.

The serious game used in this project appears to be a leverage point to prepare for the use of virtual worlds in staff training. In essence, they provide an evolutionary approach. The introduction of serious games in special operations staff training is helping to shift the culture among training audiences and training developers alike – this shift has been witnessed in recent briefings presented by Special Operations Command Joint Capabilities. It is this author's opinion that greater adoption of virtual environments will provide important capabilities like observing a training audience and their "physical" activities. These activities are a very important aspect of live training which can be observed in traditional, live training – such as observing to see if a player moves to another area of a joint operations center to gather information and collaborate with others. Additionally, the game-like feel of the scenario instills a sense of "play" and interest into the training

event. The Special Operations Command Joint Capabilities experience marks a beginning of a transition towards virtual worlds for staff training.

Finally, the project successes provide interesting opportunities to think about the broader future of staff training. It is important to consider what the future holds and develop questions to make sure the right training and learning is delivered to the desired audience with an appropriate leveraging of technology.

> *What technologies will be available in future joint training events?*
>
> *What is the role of technology in enabling new processes and relationships?*

To summarize, this project focused on assessing needs of Generation Y within TSOC staffs and using that analysis to explore immersive learning environments. Three overarching observations are captured here as insights to future training design:

- Processes used to train staffs must adapt to the influx of Generation Y arriving for their first staff assignments.
- Technology adoption strategies must also take into account needs analysis of Generation Y.
- Training strategies used to deliver content must consider new technologies identified in needs analyses.

Over the next decade, young men and women who have served in the combat zones of Iraq and Afghanistan will be coming home to serve their tours at Service and joint staffs. They come from a different generation than those currently in leadership and decision making positions. Immersive learning environments include serious games and virtual worlds. Generation Y has certain demands and expectations of learning environments. This paper affords some thoughts and questions for consideration about how future training can best serve Generation Y by adapting learning methods while leveraging a proper balance of technology to deliver the learning.

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