

5.7 Technophiles to Newbies: The Challenge of Supporting Distributed Teams to Maintain Engagement in Virtual Worlds

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The purpose of this paper is to look for links in a virtual trainee's interest and self-efficacy in a simulated event as it relates to their previous self-reported technical skill level. Ultimately, the idea would be to provide the right amount of support at the right place at the right time to set the conditions for maximum transfer of the skill sets to the work place. An anecdotal recap of a recent experiment of a medium-scale training event produced in a virtual world will provide examples for discussion. In July 2010, a virtual training event was produced for the Air Force Research Lab's Games for Team Training (GaMeTT) at the Patriot Exercise at Volk Field in Wisconsin. There were 29 EMEDS participants who completed the simulated OCO event using the OLIVE gaming engine. Approximately 25 avatars were present at any given time; including role players, observers, coordinators and participants.

1.0 INTRODUCTION

There is a growing number of high fidelity, well-developed, multi-player gaming engines available to organizations for the purpose of training individuals and geographically dispersed teams. These gaming engines provide a variety of options and capabilities, from which detailed simulated events can be conceptualized and executed virtually. This trend toward virtual world training opens up a plethora of options for organizations to accomplish learning objectives and design experiences that allow team functioning and practice in a safe environment.

Occasionally these objectives can become overwhelming to participants with little or no previous gaming experience. At best, individual, experienced gamers can interact in the virtual world with little interruption, but participant teams are seldom homogeneously technophiles. The task of supporting the accomplishment of training objectives executed in a virtual environment with participants of wildly varying technical skill sets can become a barrier to the achievement of the objectives.

With this idea in mind, participants of an experiment with a simulated event in a virtual world were recently asked questions related to their technical skill level, interest level in virtual training and self-efficacy.

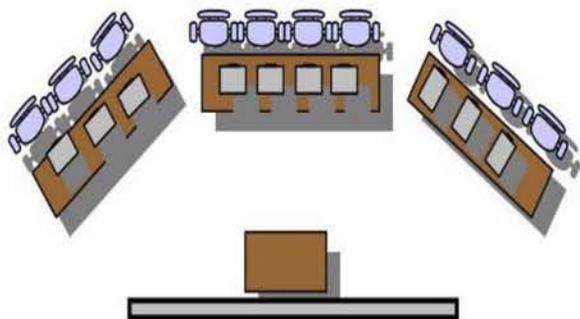
The purpose of this paper is to report upon the responses and look for links in a virtual trainee's interest and self-efficacy in a simulated event as it relates to their previous self-reported technical skill level. Ultimately, the idea would be to provide the right amount of support at the right place at the right time to set the conditions for maximum transfer of the skill sets to the work place. An anecdotal recap of a recent experiment of a medium-scale training event produced in a virtual world will provide examples for discussion.

2.0 BODY

The experiment took place at the close of the above mentioned Patriot Exercise on July 20th and 21st at building 533 at Volk Field near Tomah Washington. This particular building is on the flight line of the field and consists of several large rooms connected by halls with smaller office spaces. The rooms were equipped with ample seating, though minimal desk space

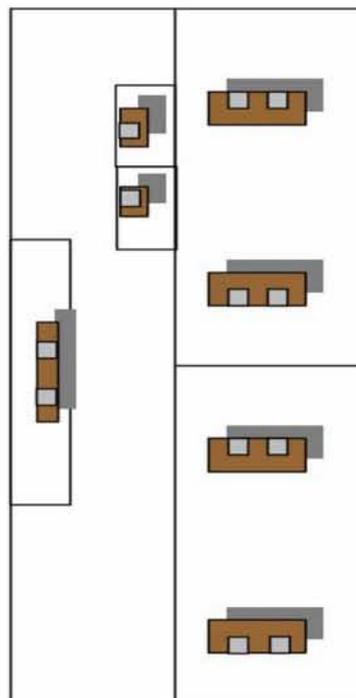
for computer set up. The building contained a SIPRINET network which was unavailable for this unclassified experiment. However, the sponsors of the event were able to secure 2 DSL connections which were temporarily routed to the building and became the uplink for the Ethernet network engineers stood up for the event.

Since wireless connections were not allowed, a router was connected to the DSL lines and Ethernet connections were established for each of 13 participant laptops used for participant and exercise support personnel. Two basic configurations were used during the experiment. The first configuration was a simple semi circle, with a trainer station in the center and a screen behind the trainer stand.



The second configuration was needed in order to simulate a geographical distance between players, as would be the case in ultimate use of the GaMeTT Training System. So, after some initial training was completed, participants were scattered throughout the facility in various rooms and offices. To make this happen, the network configuration above was broken down and moved to create various access points. The new seating/network arrangement was designed to produce as much space as possible between participants, mimicking the way in which users would connect from

work or home. See the diagram below for this configuration:



2.1 Details of the Event

There were three groups (Wednesday PM, Thursday AM and Thursday PM) brought in by van at the close of the second week of a two week live training event for forward medical teams. It is noteworthy that each of the 29 participants arrived in the building after almost two weeks of live exercises which continued 24 hours a day for 10 days. Each of the three groups was composed of individuals ready to play the following roles in the simulated event:

- Nurse (2)
- Doctor (1)
- Administrative Officer (1)
- Administrative Technician (1)
- Medical Technician (3)

Each of these medical personnel was given a 30 page user guide with quick reference charts and a live one hour intensive

instructional session on the basics of operating their avatar and functionality of the virtual world. This training was conducted in the semi-circle shown above. Additionally, one support person for every 3 participants was available to answer questions.

Operation of the simulation required the movement of an avatar, movement of objects in-world and the use of a series of menus to access the medical treatment model for trauma cases that were a part of the simulation.

After the initial training event, the participants were separated into the second configuration in order to simulate a distributed environment. In this setup – a minimum 1 live support person was provided for every 4 participants.

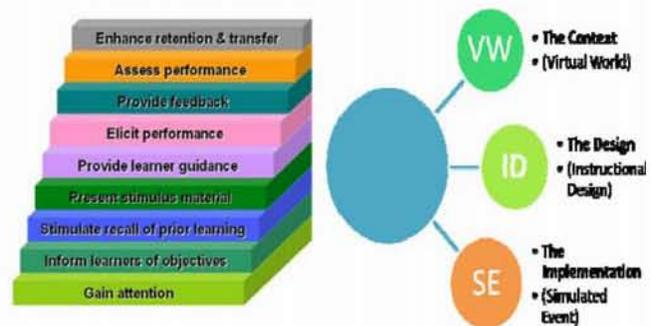
During the execution of the event, it must be noted that the server housing the virtual environment went down twice and the DSL Internet connection feeding the experimental network service was interrupted a minimum of three times.

2.2 Evaluation Criteria

The overall evaluation methodology was based on Gagne's Nine Instructional Events. Gagne proposed that if learning content contained 9 significant elements, the optimum conditions for learning would be created for the transfer of learning from the training environment to the real world. The graphic below represents these 9 events (Gagne, 1985).

This approach to the assessment and ultimately evaluation of the assessment results takes into account the fact that the transfer of training knowledge, skills and abilities can be difficult to achieve and measure in any setting. Furthermore, it acknowledges that the use an inquiry-based approach provides a holistic and iterative developmental process for solving the

multiple variables of creating a successful simulated event in a virtual world



Gagne's hierarchical model builds from the lowest level (Gaining attention) and works its way up to "Enhanced retention and transfer" so that simulation architects can ensure that the optimum conditions for learning have been created. For example, it is important to build in environmental objects and training cues that get the learner's attention before attempting to share the learning objectives. Simulation architects, engineers, and instruction designers can use the methodology's guidelines and checklists to assist with prioritization and to mark the distinction between desired from required elements. Tools such as checklists and guidelines can help streamline concurrent development occurring in three or four related but distinct design fields: engineering, instructional, graphical and logistics. (Gagne, 1977)

The idea is to use a short cycle of feedback and assessment to influence the development/execution of the simulated event as opposed to an independent examination that is conducted only once at the close of the project. Virtual world development is too intricate and multi-variable to be reduced to a single snap shot in time that produces and yes or no answer.

Meeting the requirements of the Gagne's Nine Instructional Events can be more complex than it may seem because even though their effect is hierarchical, the

creation may be neither contiguous or chronological.

The survey responses included in this paper are part of this nine layer approach to evaluating simulated events implemented in virtual worlds. In the Pre-Event Survey, the participants were asked to self-report their technical skill level directly as well as in a series of questions designed to give a relative sense of their technical abilities in relationship to others. Participants were also asked to rate their interest level in the concept of conducting training in a virtual context.

In the Post-Event Survey, participants were asked if they felt they would apply their newly acquired skill sets on the job. Research shows that this concept of self-efficacy is a strong indicator to the transfer of skill sets from a training environment to the workplace.

Learner characteristics that support transfer are self-efficacy, pre-training motivation and perceived utility. (Bandura, 1994) In fact, a number of recent studies indicate that self-efficacy is the primary indicator of whether or not participants will experience increased performance once returning to the work place. Further, the complex task of measuring performance improvement on the job and attributing that performance to causal factors related to training events can be short circuited by simply asking the participant how useful they found the learning. (Grille, 2000) Similarly, asking learners about their reasons for participating in a learning experience (are they motivated to learn) and whether or not the material is applicable to their work (will they use the skill on the job) is a positive indicator that transfer will occur.

3.0 DISCUSSION

Among all of the before mentioned details, there are several caveats. The first is that if the experiment were extended to include participants who are dispersed geographically, all training and support

would be done using the web and/or VoIP connection. Training could possibly be conducted via webinar, which still means participants would need to ready their equipment with the appropriate downloads and hardware to run the virtual environment.

This particular experiment was conducted live because the participants gathered for a live training exercise and were a "captive" audience on whom the tool could be tested.

Results of the participant Pre-Survey show that 64% reported themselves as technically proficient and 69% appear to be tech-savvy to their peers. This similar number indicates some agreement among the direct and less direct questions regarding technical skill level. Also, there were 5 individuals who rated themselves the lowest possible number on the technically proficient scale and 4 individuals who rating themselves the highest possible number.

When asked whether or not they were interested in learning more about virtual worlds, 13 individuals or 46% said they highly agreed, agreed, or were neutral. Likewise, 57% of the participants believed that virtual training can be effective for their team. Forty-six percent said they would be willing to train virtually when they return from the live exercise and 64% indicated they have high expectations for simulated events in virtual worlds.

On the Post-Event Survey, a consistent 64% said they would apply the skills learned in the simulated event to their work.

4.0 CONCLUSION(S)

These results are incredibly consistent and remarkably unremarkable considering the diversity of the group. The numbers may be interpreted to say that about the same number of highly tech-savvy individuals have high expectations and plan to apply their skills learned in the virtual world to the real world. These results span the Pre- and Post-Event surveys, therefore show little or no change in attitude.

There are two additional questions from the Post Event Survey that may reveal some interesting attitudes surrounding this simulated event in a virtual world.

When asked “During the training session, I was provided with enough support to be able to adequately use the technology”, only 29% of the participants highly agreed or agreed with the statement. Further, when asked to agree with the statement “Someone was available to answer my questions about the virtual world used in this training session.” a mere 5 individuals or 17% highly agreed or agreed.

These low numbers beg the question – if the simulated event was executed, and participants were able to learn skill sets that would be applied to the work place, how is it that the users did not feel supported? Another interesting question would be, what types of support would be needed if participants were geographically dispersed and there was no tech coach to stand over their shoulder?

In the end, the argument could be made that the low numbers for support indicate the correct amount was provided for an onsite event, since eventually the model calls for the skills to be learned either virtually or from a tutorial. Perhaps the low numbers were a good thing because if there had been too much hand holding, it would not have been replicable in a virtual environment.

In conclusion, providing the right amount of support for live and virtual events can be a complex at a minimum. Deploying a virtual environment for training can require providing a replicable model for support that addresses a number of skill levels and learning styles. Numbers can be deceiving; high agreement with a support question could mean that the level of support cannot be replicated in a distributed environment.

This delicate balance is a necessary one to achieve to avoid creating a barrier with the virtual technology rather than a tool.

5.0 REFERENCES

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