



Serious games do not exist in a vacuum; they are part of a course, curriculum, or larger learning experience. Instructional designers must plan for easy and natural integration of serious games into the overall learning design. Most especially, learning designs must include a plan for learning transference from the game back to the greater learning plan or back to the workplace. The Lance P. Sijan simulation game range on MyBase Zeta, in the open virtual world of Second Life, is one such example.

The game range provides one of the myriad virtual-world venues wherein tech-enabled experiential learning takes place in a collaborative environment. Teams may work in tandem or opposition while game-range staff, instructors, and/or evaluators control environmental conditions and other elements of the range. Team performance is observed and recorded for post-event feedback designed for learners' application to future experiences, in Second Life *and* in real life.



GAME SET VILLAGE: AVATAR VIEW



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“Where educational innovation knows no boundaries”

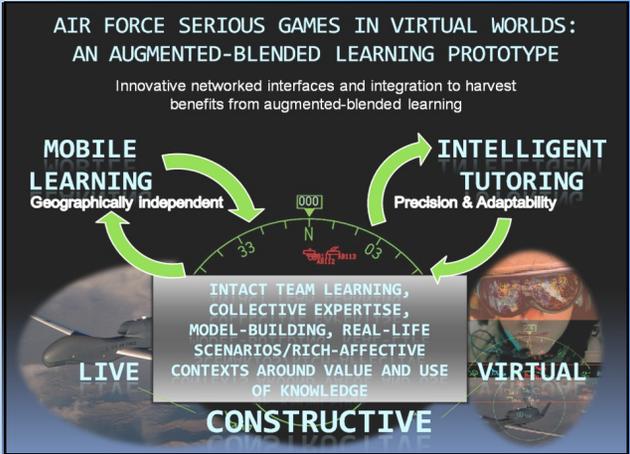
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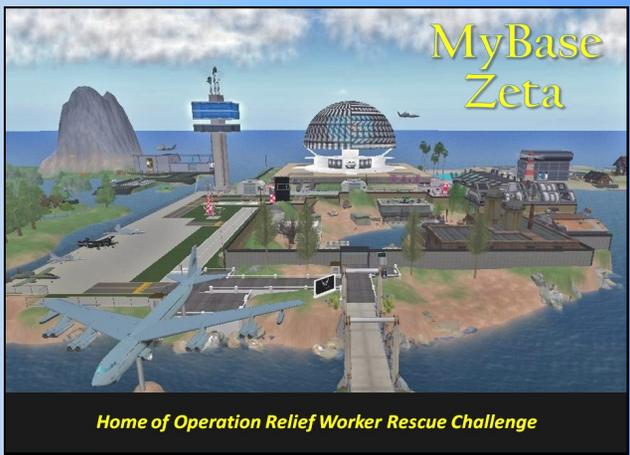
To Visit Us in Second Life
 search for “MyBase Zeta”

“Serious games... for learning... seriously?”

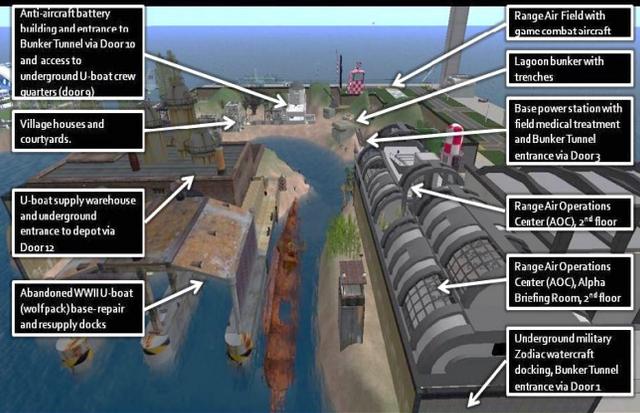
Military, healthcare, education, and corporate organizations around the world are enjoying the positive effects serious-game implementations have had on their learning needs.



While *serious games* may sound like an oxymoron, in reality it is a very rapidly growing, exciting industry.



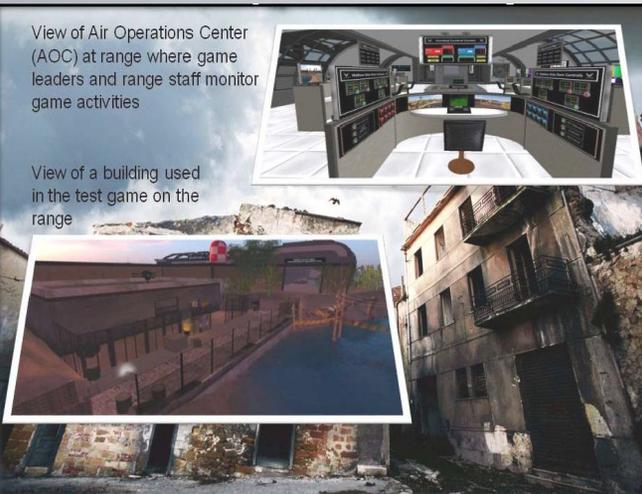
Captain Lance P. Sijan Leadership Range Operation Relief Worker Rescue Challenge (Set Design)



- Anti-aircraft battery building and entrance to Bunker Tunnel via Door 10 and access to underground U-boat crew quarters (door)
- Village houses and courtyards.
- U-boat supply warehouse and underground entrance to depot via Door 12
- Abandoned WWII U-boat (wolf pack) base, repair and resupply docks
- Range Air Field with game combat aircraft
- Lagoon bunker with trenches
- Base power station with field medical treatment and Bunker Tunnel entrance via Door 3
- Range Air Operations Center (AOC), 2nd floor
- Range Air Operations Center (AOC), Alpha Briefing Room, 2nd floor
- Underground military Zodiac watercraft docking, Bunker Tunnel entrance via Door 3

Serious games, already a global, multi-billion-dollar industry, are described by many analysts as the newest wave of technology-mediated learning. Serious games offer powerful, effective approaches to learning and skills development, which helps organizations engage with members of today's workforce and attract those of tomorrow's.

Serious games are rapidly gaining traction in military, business, education, and medical applications as Gen X and Y come into power. Military and emergency-services organizations were very early adopters of serious games for training. In fact, the Department of Defense originally coined the term "serious game" as a more acceptable way to talk about "war games" with Congress and the public.



- View of Air Operations Center (AOC) at range where game leaders and range staff monitor game activities
- View of a building used in the test game on the range

In the education arena, most eLearning thus far has been designed along the lines of the traditional paradigm of instruction, resulting in something akin to a trivia contest. This methodology most often yields learning only at the lower levels of the cognitive domain, which is in opposition to instantiating the kind of experimentation, problem solving, and collaboration that characterizes the new gaming age. This approach promises richer, more engaging learning experiences aimed at higher levels of both the cognitive and affective domains.

AIR FORCE FLIGHT CREW COMMUNICATIONS SERIOUS GAME:

DISTRIBUTED INTACT-TEAM LEARNING USING AUGMENTED-BLENDED LEARNING

- Advances in simulation and networking technology provides for augmented-blended learning combining live, virtual, and constructive environments
- The augmented-blended learning environment also supports the use of co-player intelligent agents to assist distributed intact-team learning during synthetic missions
- The *Air Force Flight Crew Communications Serious Game* is a prototype of augmented-blended learning using a combination of live, virtual, and constructive environments involving physical classrooms, virtual worlds, and networked constructive technologies



Screen snapshot from game

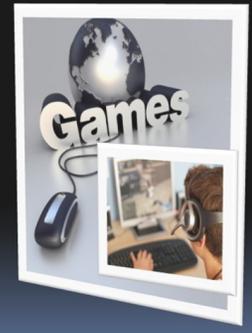
While game developers acknowledge the risk of trivializing real-world issues, intelligently designed serious games allow complex situations to be presented in a much safer and more cost-effective way. Underlying this move toward game-based learning environments is more than strategic opportunity or marketing; the shift toward games also represents an intellectual recognition among many that these games represent experiential learning spaces—spaces where learners have rich, embodied, collaborative, and cooperative interactions where they think with complex tools and resources in the service of complex problem solving.



- Game C-130 cargo loading
- Game C-130 pilot view
- Game C-130 on approach

WHY SERIOUS GAME-BASED LEARNING FOR AIR FORCE EDUCATION?

- Serious game-based learning can help bridge school-based training and education knowledge with valuable experiential learning to apply and adapt knowledge when addressing real-life challenges.
- The right mix of live, virtual and constructive serious game-based learning environments can help bridge Airmen development across training, education and experience.
- Serious game-based learning helps blend emphasis on cognitive and affective habits of mind (e.g., social learning, self-regulation, critical thinking, and creative thinking) so our Airmen can perform effectively when situations are unpredictable and demand change.



Casual games: Purely for entertainment, these may include everything from the solitaire game preloaded on personal computers to downloadable games to hugely complex multiplayer games such as World of Warcraft, Diablo, Halo, and everything in between. While learning can and does occur within casual games, it is a byproduct, rather than an intentional outcome of game play.

Serious games: Used in many sectors of society and every level of education, their goal is to improve specific aspects of learning—and players come to serious games with that expectation. Play, an important contributor to human development, maturation, and learning, is a mandatory ingredient of serious games.

Advergaming: Drawing from both casual and serious games, these use public-persuasion techniques to promote a product, brand, cause, or political candidate. Advergaming are becoming a popular form of marketing for movie and TV show debuts.

LEARNING IN IMMERSIVE VIRTUAL REALITY

Benefits of learning in immersive virtual reality:

- Multi-sensory environment can be embodied by learners in such a way as to actively inhabit, interact, and create events
- Environment can be designed to be experiential and intuitive, providing learners with control over time, scale, and physics for a shared experience
- Provides rich context supporting interactive hands-on learning, group projects and discussions, virtual field trips, simulations, concept visualizations
- Provides surrogate settings of actual work environments supporting apprenticeship, collaborative teamwork, coaching, and monitored performance feedback

