



3DiTeams-Healthcare Team Training in a Virtual Environment



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Introduction

According to JCAHO, teamwork and communication lapses are a root cause in up to 70% of healthcare sentinel events. Effective team coordination is critical for the safe delivery of healthcare. Development of these skills requires training and practice in an interactive team-based environment. High-fidelity simulation is sometimes used to train teamwork and communication skills. High-fidelity simulation is less useful when training large groups of learners due to issues of cost, portability, scalability, and supporting infrastructure.

The military leads the way in the use of gaming technology for training. Gaming technology is now used regularly to train American soldiers throughout the world. Three-dimensional immersive computer environments provide an engaging and cost-effective alternative to other interactive training solutions.

We are developing an interactive healthcare team trainer in collaboration with the United States Army (Department of Defense / Telemedicine and Advanced Technology Research Center) and Virtual Heroes, a state-of-the-art gaming studio. The new training platform is called 3DiTeams. The teamwork and communication curriculum and objectives are adapted from TeamSTEPPS; an evidence-based framework for team training developed by the Department of Defense and the Agency for Healthcare Research and Quality.

Methods

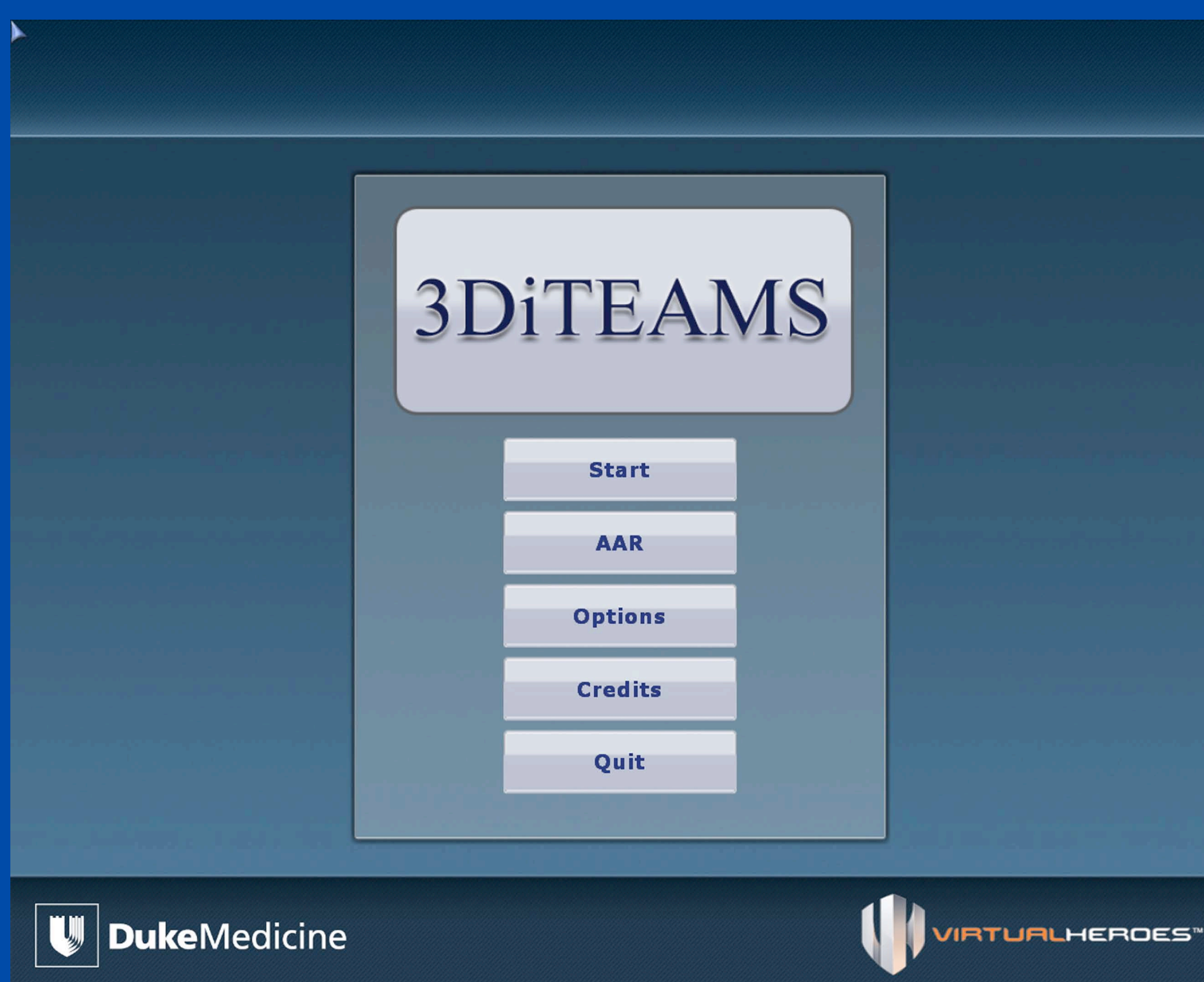
3DiTeams is built with commercial gaming technology (Epic's Unreal Engine 2.5) and includes an embedded physiology engine. 3DiTeams will run on any network-connected personal computer.

3DiTeams training consists of three phases:

Independent Learning Phase – Individuals study teamwork and communication concepts online. Learners apply these concepts by watching and identifying important behaviors in video vignettes.

Collaboration / Team Coordination Phase – As many as thirty learners enter a virtual world together. Team members can be in the same room or spread throughout the world. Team members apply the principles they learned in the Independent Learning Phase while caring for a virtual patient. Team members, instructors, and non-participant observers comment and rate the interactions they witness.

Debrief / After Action Review - Video and voice recording of the Collaborative Phase is played back live or over the internet. A facilitator-lead debrief allows the learners to observe their behaviors, reflect on their actions, and discuss the positive and negative interactions that took place during the challenging scenario.



Results

The 3DiTeams platform was completed in October of 2007. Anticipated users include medical students, residents, nurses and faculty in a large academic health system. Wider distribution is anticipated.

The 3DiTeams platform is currently being compared to traditional forms of team training using metrics that include knowledge, skills, attitudes, learning efficiency, learner satisfaction, and cost.

Conclusions

We believe advanced learning technology platforms such as 3DiTeams will have a prominent place in the future of healthcare training and evaluation due to their interactivity, flexibility, scalability, portability, and reduced infrastructure costs.



Acknowledgments

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In accordance with Duke University intellectual policies and procedures let it be known that Duke University, Dr. Taekman and Dr. Wright might benefit financially if 3DiTeams proves commercially successful.