

Foreword

By using design-based research (Dede, 2005), the next generation of games and simulations has the potential to dramatically improve students' motivation and educational outcomes, as well as generating new insights about the nature of learning. To accomplish these goals, proponents of these interactive media must recognize some lessons learned from prior research on many types of learning experiences. These include:

- No educational design is always powerful for all participants, because learning strengths and styles, as well as sources of engagement, vary greatly among people.
- As with all other types of learning experiences, games and simulations will not result in educational benefits unless their design is excellent along multiple dimensions.
- To the extent that games involve competition (e.g., winners and losers based on uni-dimensional scoring systems, as in professional sports), some participants' motivation will increase, while others' will diminish.
- To be effective for learning, simulations must walk a tightrope between authenticity and validity to the real world (which makes learning more difficult, because reality is complex) and oversimplifications that introducing misconceptions, which in turn make later, deeper learning more difficult.

At the moment, the media are touting games and simulations as the latest panacea for education's problems, but today's hype will inevitably turn into tomorrow's disillusionment unless designers and scholars think deeply about these issues, are principled in their studies, and are cautious in their claims.

In our work on the River City multi-user virtual environment (<http://muve.gse.harvard.edu/rivercityproject/>), a game-like immersive simulation for middle school students, we are constantly reminded of how many powerful options for sophisticated information and communication technologies now enable. Designers can easily lose their way in developing

virtual settings that are fascinating and fun, but fall short of conveying deep content, higher order skills, and complex ethical perspectives. The various contributions to this volume reflect the leading edge of work in games and simulations for learning. Together they exemplify the current strengths and limits of this emerging field, and collectively the authors convey a sense of what is possible, what is desirable, and what we now can attain.

Like the contributors to this book, I am very excited about the potential of the next generation of games and simulations for education. Over the next decade, immersive, mediated, situated learning experiences may open up transformative types of learning in and out of academic settings. I hope that reading this book will inspire you to join all of us in exploring these powerful interactive media.

Reference

Dede, C. (2005). Why design-based research is both important and difficult. *Educational Technology*, 45(1), 5-8.

Chris Dede, the Timothy E. Wirth Professor in learning technologies at the Harvard Graduate School of Education, is deeply interested in the expanded human capabilities for knowledge creation, sharing, and mastery that emerging technologies enable. His teaching models the use of information technology to distribute and orchestrate learning across space, time, and multiple interactive media. His research spans emerging technologies for learning, infusing technology into large-scale educational improvement initiatives, policy formulation and analysis, and leadership in educational innovation. He is currently conducting funded studies to develop and assess learning environments based on modeling and visualization, online teacher professional development, high-bandwidth telementoring, wireless mobile devices for ubiquitous computing, and multiuser virtual environments. Dr. Dede also is active in policy initiatives, including creating a widely used State Policy Framework for Assessing Educational Technology Implementation and studying the potential of developing a scalability index for educational innovations. From 2001 to 2004, he served as chair of the learning & teaching area at Harvard Graduate School of Education.