Jones, J. G., & Warren, S. J. (2008, March). Chalk house: A 3D online learning environment for literacy. Paper presented at the Society for Information Technology and Teacher Education International Conference, Las Vegas, NV.

Chalk House: A 3D Online Learning Environment for Literacy

Greg Jones Created Realities Group, USA greg@created-realities.com

Scott Warren Design+Research Collective, USA drclab@gmail.com

Abstract: Chalk House, the first in a series of situated learning modules being developed as a collaboration between Created Realities Group and the Design+Research Collective, is an online computer-based 3D environment in which game play and engaging narrative are used to improve student literacy skills, namely reading and writing, are the key focus of learning. Chalk House uses the CRG 3D online learning environment to deliver this learning module. The current version of Chalk House is focused on middle school students, ages 10-14, who commonly resists traditional reading and writing activities in the classroom.

Chalk House

Chalk House, the first in a series of situated learning modules being developed as a collaboration between Created Realities Group and the Design+Research Collective, is an online computer-based 3D environment in which game play and engaging narrative are used to improve student literacy skills, namely reading and writing, are the key focus of learning. Chalk House uses the CRG 3D online learning environment (framework) to deliver this learning module. The current version of Chalk House is focused on middle school students, ages 10-14, who commonly resists traditional reading and writing activities in the classroom (Goldberg, Russell, & Cook, 2003; Marshall, 2002).

Chalk House overlays learning tasks on top of game tasks such that students completing tasks in the environment are focused on formal learning requirements. This is accomplished by breaking the interaction into different levels that initially frame the learner's entire task, then drop down to build from low to highly cognitively challenging tasks. At the Top Level, the Chapter is the overall local story and problem (from Problem Based Learning) that the learner will be dealing with and attempts to narrate, solve, and move through linearly in order to complete the required news stories. The next level, the Investigation level, the student is tasked with gathering the information necessary for the Chapter. Each Investigation level has a number of completion tasks (lowest level), that has the student write, read, or develop other requirements necessary for building formal literacy competencies.



Figure 1. Three characters from the Chalk House environment.

The engagement of youth with electronic games and social networks has not gone unnoticed by educators. Electronic media and the interconnectivity afforded by electronic media are changing the way we communicate and learn. In the 2004, the Pew Internet and American Life Project Teens and Parents Survey, 81 percent of adolescents reported playing online games; 76 percent of adolescents surveyed reported that they learned about current events through the internet; 89 percent used email; and 75 percent used instant messaging (Lenhart, Madden, & Hitlin, 2007). Video games have captured the imagination of our youth.

Games and simulations in the classroom offer the promise of student interactivity, autonomy, motivation, and modeling potentials (Prensky, 2001; Winn, 2002). However, the actual impact of games and simulations as platforms for K-12 formal learning must be scientifically explored and validated (Jones, 2007). Reading has not been an area that has been focused on heavily in the realm of video games for learning, which makes it of interest for development and research.



Figure 1. A view of *Chalk House* within the Created Realities game framework.

Classroom Integration

The dilemma when considering games for school-based formal learning is that there is little room in today's educational climate for technologies that do not either accelerate or greatly increase learning (Roblyer, 2005). While 3-D environments, like their game cousins, are motivating and engaging to students (Jenkins, Squire, & Tan, 2003; Tuzun, 2004), there are other educationally sound mechanisms that fit into current time and learning constraints that also achieve the same or better learning outcomes for students. The fact that students spend a lot of time playing games does mean that the games are based on a sound, efficient and effective instructional design (Hersch, 1998; Zanthus, 2003, cited in Saltzman, 2003).

The problem with the design of most games is not with the ultimate effectiveness of game environments; instead the problem stems from the time required by learners interacting within these game interactions and environments and games to show improvement in achievement related to formal learning outcomes. A student's learning in an immersive inquiry-based multi-user environment often requires an increased amount of time and contiguity in the virtual space to achieve increases in formal learning outcomes when compared with more traditional, face-to-face learning environments.

One way that this game diverges from other attempts to develop games for learning such as those completed in science subject areas, is that it focuses on including computer-directed opportunities for engaging in reading practice rather than using social constructivist inquiry-learning or problem-based learning instructional design approaches. It targets reading using several approaches to improving student skills related to both vocabulary and reading comprehension.

A second place where this instructional design contrasts with past and existing approaches to learning game design is the manner in which students have been immersed within inquiry-based or problem-based learning of multi-user virtual environments (Barab et al., In Press; Barab, Thomas, Dodge, Carteaux, & Tuzun, 2005; Barab, Warren, & Ingram-Goble, In press), which has been extremely time-consuming. Thus, a major goal of this is reduce the amount of time it takes to produce a measurable impact on learning using standardized testing. Specifically, in this case, the measures target student skills and knowledge related to state and national standards in the areas of vocabulary and reading comprehension at the sixth grade.

Current Research

Current research being conducted with the *Chalk House* learning game focuses on the impact of the environment on reading and writing skills. Two Texas High Schools are currently using the software during the Spring of 2008. Additional research is focused on the perceived impact and preferences of students for specific intelligent agents that have a.) different degrees and quality of information for the learners, 2.) different levels of agent change in interaction with students depending on player action, and 3.) the level of colloquialism present in agent speech or dialogue. Each question specifically examines the preferences of students classified as 1.) Limited English Proficiency (LEP) students, 2.) those classified as gifted and talented, and 3.) according to gender.

Conclusion

Because the necessary information required to complete each task is embedded within the texts, students must read to decode vocabulary, understand multiple meanings of words, and understand information unique to multiple genres such as news stories and folklore. If they do not engage in these strategies, they cannot succeed at the game. Student success at learning tasks is expected to act as an indicator of individual sustained silent reading, which has been difficult to ensure in traditional classroom silent reading periods (Marshall, 2002).

References

- Barab, S. A., Sadler, T. D., Heiselt, C., Hickey, D., & Zuiker, S. (2006). *Relating narrative, inquiry, and inscriptions: A framework for socio-scientific inquiry.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.
- Barab, S. A., Scott, B., Ingram-Goble, A., Goldstone, R., Zuiker, S., & Warren, S. J. (In Press). Contextual embodiment as a curricular scaffold for transferable understanding. *Contemporary Educational Psychology*, 34.
- Barab, S. A., Thomas, M., Dodge, T., Carteaux, R., & Tuzun, H. (2005). Making learning fun: *Quest Atlantis*, a game without guns. *Educational Technology Research & Development*.
- Barab, S. A., Warren, S. J., & Ingram-Goble, A. (In press). Academic Play Spaces. In R. Fertig (Ed.), *Handbook of Research on Effective Electronic Gaming in Education*. Hershey, PA: Idea Group Reference.

- Barab, S. A., Warren, S. J., Zuiker, S., Hickery, D., Ingram-Goble, A., & Dodge, T. (2006, April 7-11, 2006). *Transfer of Learning in Complex Learning Environments*. Paper presented at the American Educational Research Association Annual Meeting, San Francisco, CA.
- Goldberg, A., Russell, M., & Cook, A. (2003). The effect of computers on student writing: A meta-analysis of studies from 1992 to 2002. *The Journal of Technology, Learning, and Assessment, 2*(1).
- Jenkins, H., Squire, K., & Tan, P. (2003). Entering the education arcade. . Computers in Entertainment 1(1), 17.
- Jones, J. G. (2007, March). *Integrating and Evaluating Games and Simulations into the Classroom*. Paper presented at the CoSN's 6th Annual International Symposium: Using Games and Simulations for Engaged Learning, San Francisco, CA.
- Jones, J. G., & Bronack, S. C. (2006). Rethinking cognition, representations, and processes in 3D online social learning environments. In D. Gibson, C. Aldrich & M. Prensky (Eds.), *Games and Simulations in Online Learning* (Vol. 2, pp. 107-147). Hershey, PA: Idea Group.
- Marshall, J. C. (2002). Are they really reading? Expanding SSR in the middle grades. Portland< ME: Stenhouse Publishers.
- Prensky, M. (2001). Digital game-based learning. New York: McGraw-Hill.
- Roblyer, M. D. (2005). Educational technology research that makes a difference: Series introduction. *Contemporary Issues in Technology and Teacher Education (CITE) Journal*, 5(2).
- Tuzun, H. (2004). *Motivating learners in educational computer games*. Unpublished Dissertation, Indiana University, Bloomington, IN.
- Warren, S. J., Barab, S. A., & Dondlinger, M. J. (In Press). A MUVE towards PBL writing: Effects of a digital learning environment designed to improve elementary student writing. *Journal of Research on Technology in Education*.
- Winn, W. (2002). Current trends in educational technology research: The study of learning environments. *Educational Psychology Review*, 14(3), 331-351.