TEACHING IT WITH SYNTHETIC COMMUNITIES OF PRACTICE

S.P.Overmyer*, I.Ivanov, A.Fazylova, S.Islam, K.Kinayat,
K.Kussainov, N.Sailuova, I.Zhunisbekova

School of Science and Technology, Nazarbayev University, Astana, Kazakhstan; *sovermyer@nu.edu.kz

INTRODUCTION.

The goal of this research is to unleash the creative potential of computer science students by engaging them in problem-solving activities within immersive simulations of real-world problem domains. This engagement provides the experience of learning to create solutions to ill-defined, real-world problems in a risk-free, but constrained and adaptive environment. Our long-term intention is to exploit the value of communities of practice for individual students by determining the necessary and sufficient conditions for the formation of synthetic communities of practice (SCoP). This SCoP typically involves one "live" student, and a "community" of intelligent agents.

MATERIALS AND METHODS.

As a testbed for investigating SCoPs for experiential learning, a virtual Nazarbayev University was constructed in OpenSIM. Within this environment, several facilities were constructed, including a grocery store, café, buildings with several university classrooms, and other spaces. Students were tasked with modeling the database requirements for a new point of sale system within the virtual grocery store, and producing a model of the database supporting the PoS system (i.e., an entity-relationship diagram (ERD)). Requirements information was obtained by conversing with conversational agents in defined roles (e.g., store manager and clerk) as well as by examining information-rich objects in the virtual world. To assist the students in learning to build correct ERD models, a pedagogical agent was constructed capable of evaluating submitted models and giving text feedback directly to the students in the form of a "mentor" avatar in the virtual world. An experiment is being conducted to determine the relative effectiveness of this approach versus the same environment without the support of the pedagogical agent.

RESULTS AND DISCUSSION.

Preliminary data suggests that students who had the support of the pedagogical agent turned in more accurate assignments, spent more time on task (i.e., the assignment), and scored better in a subsequent quiz about ERD modeling.

ACKNOWLEDGMENTS.

REFERENCES.

1. Overmyer S.P. (2013). An architecture for teaching creative systems problem solving using Synthetic Communities of Practice (SCoP), In Proceedings of the 2nd International Conference on eLearning and eTechnologies in Education (ICEEE 2013), Lodz, Poland, 23-25 September, 2013.

2. Overmyer S.P. (2014). The effectiveness of teaching data modeling using pedagogical and conversational agents in virtual worlds, to be presented at the 4th Global Conference: Experiential Learning in Virtual Worlds, Prague, Czech Republic, 22-24 March, 2014 (accepted for presentation).